A WIRELESS HANDSET STRATEGIC MARKETING PLAN FOR PRC MARKET

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ABSTRACT

Due to the rapid development of China economy, telecommunication services are also experiencing a tremendous growth in the past few years. Among various kinds of telecommunication services, wireless communication service probably enjoys the highest growth. With regard to this great opportunity, Nortel China Wireless group decided to start a new business line - wireless handset sales - in China. The immediate management issues to Nortel China are the strategic questions of what, how and where to sell. This report is developed as a strategic marketing plan to address those questions. In this report, through exploratory marketing research and a systematic analysis of data, market environments are identified, strategies are formulated, and the initial marketing program is proposed. The aim is to provide guidelines for Nortel China in entering the business.

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INTRODUCTION

China is, without a doubt, such a huge and emerging market that it represents numerous opportunities for all marketers and entrepreneurs. With a population of 1.2 billion and an average two-digit GDP growth rate, China's business potential is not just speculation, but something which can really be quantified. However, the competition is also proportionately great. In order to be successful, a company must make the right and sound business decision on its first day.

Nortel, the fifth largest telecommunication equipment supplier globally, through its subsidiary Nortel China started its China business in 1988. Telecom is one of the key development areas in China's "Five Year Plan." Benefiting from the rapid development of the telecom infrastructure, Nortel China's business has grown from zero to more than US$400M in 1996. To sustain its growth and success, Nortel China has to continuously find ways to extend both the business scale and scope. Recently, one of the business decisions from Nortel China Wireless group is to enter the wireless handset terminal market.

Such a decision is a new challenge to Nortel China Wireless in two ways: 1. the wireless handset business is a new line of business for Nortel China Wireless; 2. handset sales represent consumer product sales, which Nortel China Wireless has never done before. So the initial management issue is to determine what to sell, as well as how to sell it. Therefore, the main aim of this report is to develop a strategic marketing plan which serves as a guideline for Nortel China Wireless to enter the new business area. By conducting exploratory market research and a systematic analysis of data, market environments are identified, strategies are formulated, and the initial marketing program is proposed in this document.

CHAPTER II

COMPANY BACKGROUND AND OBJECTIVES

Nortel and Nortel China

Nortel (previously known as Northern Telecom) had 1996 revenues of US$ 12.5 billion and has approximately 60,000 employees worldwide. It is ranked as the fifth largest telecommunication equipment manufacturer in the world. Nortel is a major telecom equipment supplier with presence in more than 100 countries and operates manufacturing facilities in 13 countries throughout the world.

As the world's leading supplier of digital network solutions and services, Nortel is playing a strategic role in the development of China's telecommunication infrastructure, providing the latest technology and innovations for a networked digital economy.

Nortel China, created as a business unit of Nortel in 1993, oversees business operations including research and development, manufacturing, sales, and post-sales service in the Greater China region, consisting of the People's Republic of China, Hong Kong, and Taiwan. It is one of Nortel's most significant centers of business outside of North America.

- Nortel China had over US$400 million of revenue in year 1996.
- Nortel China, directly and through its joint ventures, employs a highly trained, widely localized work force of more than 2,560 people.
- Over 90% of Nortel's employees are locally hired. Approximately 90% of Nortel China employees hold a degree, and over 32% of Nortel China's direct employees have a degree in engineering.
- Nortel China spent over US$53 million on R&D in 1995, and another US$25 million in 1994 throughout Greater China.

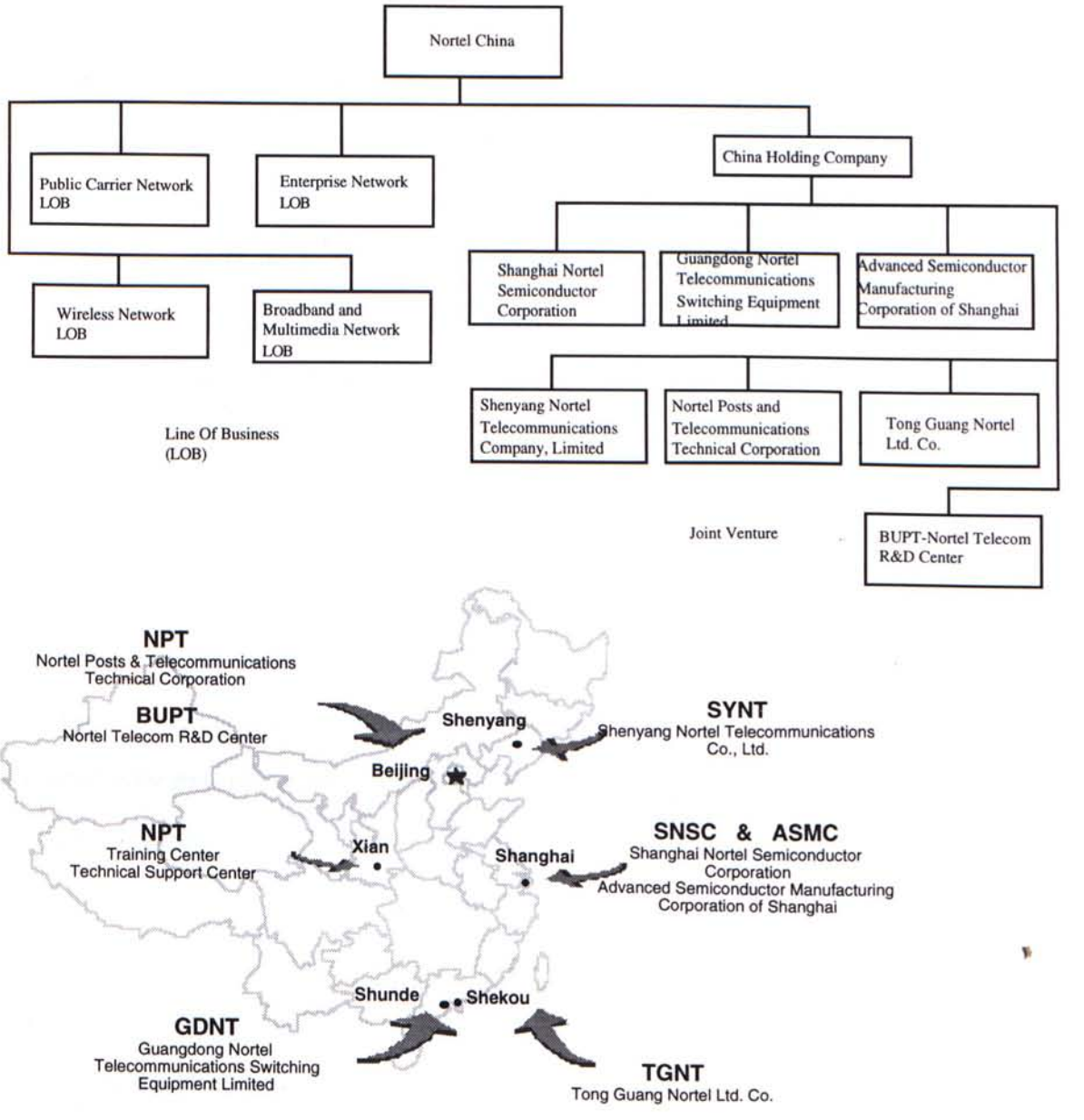
Capital investment

- Nortel, either directly or through joint venture, has a total of 20 sites in Greater China.
- Nortel offices and facilities are located in Beijing, Shanghai, Shengyang, Xian, Shunde and Guangzhou in the PRC, as well as in Hong Kong and Taipei.
- Nortel's estimated capital investment will be approximately US$150 million through 1998.

Organizational Structure

Nortel China markets, sells, and manufactures nearly every product line in Nortel's global portfolio, including the DMS family of central office, wireless network infrastructure, semiconductors, fiber-optic transmission system, and PABX. The present organizational structure is:

FIG.1 NORTEL CHINA ORGANIZATIONAL STRUCTURE AND BUSINESS LOCATIONS



The current employment of the joint ventures are: GDNT currently employs 572 (expected to employ up to 2000 by 1997), ASMC employs 404, SNSC employs 50, TGNT employs 457, SYNT employs 64, NPT employs 260, and BUPT employs 79. In conclusion, Nortel China has a long-term commitment to the China market. The supply of resources and capital should not be a problem in the near future. Nortel has the capability to extend its business scale and product portfolio.

Corporate Goal

The corporate goal of Nortel is to achieve market leadership through customer satisfaction, supervisor value, and product excellence. Nortel strives to be the supplier of choice for the customer, the employer of choice for the employee, and the investment of choice for the shareholder. The mission statement, in short, is: "To be the largest telecom equipment supplier by the year 2000." To achieve this mission, Nortel positions itself against competition as the preferred global resource, the trusted partner in all of its business at present and in the future.

Goal of Nortel China

China is a new market for many industries and telecommunication is one of the fastest growing ones. The objective of Nortel China's marketing function is to, as quickly as possible, penetrate into the market as the preferred company for supplying telecommunication equipment, gain market share, and maximize profit.

Getting to the customer before the competitor is the key to success in China. Gaining market share is the highest priority. With a bigger installation base, revenue will be guaranteed as the demand for telecommunication service grows with the developing economy in China.

Profit is always a company's important measurement. However, as Nortel is still in its developing phase in the China market, profit is below market share on the priority list of Nortel China. A huge investment has been made in recent years to set up offices in major cities in China, set up local manufacturing joint ventures, recruit staff, etc. Marketing expense is so high that it drives the profit relatively low. However, in the coming few years after the initial expansion has been completed, Nortel will enjoy the returns from today's investment and should see a higher profit.

There are several ways to achieve the goal of gaining market share and revenue:

- upgrade the equipment installed for existing customers, both in terms of capacity and new advanced features
- explore new customers and new product areas such as mobile cellular infrastructure and handset equipment
- win back from competitors in all product areas; this is the most difficult, as Nortel has to displace existing vendors in their established bases

Product Group Goal (Wireless)

Nortel China consists of four Lines of Business (LOB). They are: Public Carrier Network group, Private Enterprise group, Wireless Network group, and Broadband and Multimedia group. Since the marketing of the wireless handset falls within the business scope of the Wireless Network group, only this group's objectives will be discussed here.

In 1995, the revenue of the Wireless Network group was US$105M in total. When compared with other LOBs, Wireless group is still in its growing phase. Besides the high level goal of Nortel China, the Wireless LOB has its own set of operational objectives to meet. Strategically, the Wireless LOB has to expand its product portfolio, business scale, and market share. All these are basically aligned with the high level goal of Nortel China. In particular, there is a new strategic objective to promote Nortel's wireless communication terminals in the China market. In fact, this whole marketing plan is devoted to achieve this strategic goal of Nortel China Wireless group. This document assumes a strategic point of view: what, how, and where Nortel China Wireless should enter the wireless handset market. To be a success in the consumer electronics business, Nortel has to establish a prestigious brand image in the Chinese consumers' eyes.

CHAPTER III

RESEARCH OBJECTIVES AND DESIGN

Research Objectives

The research should basically echo the business needs. Given Nortel China Wireless management's issues, the research needs to answer the strategic question of : "what," "how," and "where." The scope is limited to the China marketplace. Therefore, the research objective is to develop a China marketing plan for Nortel China Wireless in handset sales.

Research Design

Sometimes there are constraints (e.g., time and budget) in designing market research. In the captioned case, as the target market is mainland China, physical location is a constraint to the researcher. Since the research question is defined at a high level, vague, not well defined, and broad in scope, it is more appropriate to adopt secondary data and an exploratory approach. It is also due to the location and budget constraints too. And as Nortel has no experience and is unfamilar with the wireless handset market, no specific hypotheses can be set. Therefore, it is more desirable to start with exploratory probing, which allows a broader scope and more flexibility.

The research tries to tackle the situation analysis, strategy developments and market program development stages of marketing planning:

Situation analysis - An effective marketing plan is built on an in-depth understanding of the market environment of the business, and the specific characteristics of the market. Secondary data from public databases, annual reports, and articles on the environment (for example, political and regulatory

trends, economic and social trends, and technological trends) are collected. They are presented in the market environment sections, so that readers can have a better understanding of the China market.

Strategy Development - In this stage, some questions need to be answered: "What business should Nortel be in? What product? What technology? What market? How to compete?" In the face of competition, business strategies have to be developed in order to differentiate against competitors. Research is essential to reveal which product attributes differentiate against the competitive advantages, capabilities, and strategies of competitors. Mainly exploratory secondary data are collected from reports and articles. In addition, in-depth interviews with four subject experts have been carried out as well. The main purpose is to identify the target market regions and possible competitive strategies. Those experts are Nortel's senior sales personnel. Each one of them has a particular physical area to focus and years of China sales experience.

Market Program Development - The market program embraces specific tasks which help to sell the goods. Secondary data on the Chinese marketing environment are collected to help define the action plan. However, the main information sources are interviews with China marketing professionals and systematic analysis of the data derived from the previous two stages. Again, four marketing professionals from different companies are interviewed. They are selected due to their expertise in promotion, distribution and pricing areas. In fact, they are all involved in marketing high-tech consumer products. Their advice helps to formulate effective and practical marketing programs.

Market Survey

In addition to the above mentioned exploratory data, some descriptive research results are also incorporated in this document to provide better insight.

In mid-1996, Nortel had sponsored a market survey which was carried out by the magazine Telecomn. The research was focused on the mobile phone market in China. The survey objective was to reveal some of the common beliefs and perceptions of existing cellular phone users.

Survey Design

As Nortel was not the sole sponsor, it had no part in designing the survey questionnaire. The questionnaire was originally published in the magazine Telecomn (May, 1996). Readers were encouraged to mail back their responses. Gifts were randomly given to some respondents as an incentive. The time frame of collecting was about one month. Since the circulation was mainly within mainland China, so the survey was basically a random sampling among magazine Telecomn's readers in China. Finally, 35,000 responses were returned and analyzed.

The survey focused on the following:

1. the reasons for purchasing a mobile phone.
2. whether the users are satisfied with their phones?
3. which brand consumers perceive as popular?
4. which country-of-origin consumers perceive as good quality?
5. why they change their cellular phone?
6. what brand(s) they will buy in the future?

Survey Results

1. the reasons for purchasing a mobile phone.

Actually, the first question was designed somehow confusing. The suggested answers were a mix of "purchase motives" and "purchase considerations" which represented both why and what.

It was found that "practical need" and "special price promotion" were the major reasons that causes a consumer to buy a mobile phone. And surprisingly, "status quo" had only little effect.

In addition, "special price promotion" and "aesthetic look" were two major considerations for a consumer in making purchase decision. Therefore, price was an very important factor in decision making for Chinese consumers.

2. whether the users are satisfied with their phones?

In general, China consumers are satisfied with the products that they can buy in the market. However, three areas (price, reception, and after-sales services) still need further improvement. In these three areas, some consumers were not satisfied and ranked themselves as "disappointed."

3. which brand consumers perceive as popular?

Currently, Motorola was perceived as the most popular brand in China. The others are: Ericsson, Nokia, NEC, and Siemens. This reflected that American and European brands were perceived to have better brand images and probably large market share.

4. which country-of-origin consumers perceive as good quality?

China consumers view the American and European products to have higher quality.

5. why they change their cellular phone?

Replacement and upgrade is common. China consumers are continuously looking for the latest models to buy. This represented 90% of the respondents' view.

6. what brand(s) they will buy in the future?

The most preferable brand in China is Motorola, with Ericsson a few percent behind. Motorola's high market share is due to its dominant position in the analog TACS phone market. One notable point was that Nokia was ranked as third preferable brand. Its percentage points was ever rising as well.

(Refer to APPENDIX 1 for survey results plotting.)

CHAPTER IV

PRODUCT AND MARKET BACKGROUND

Wireless Communication Standards

Since the emergence of wireless communications, many different technical standards have been set up in order to provide communication services for the general public. As the technology baseline for different standards is different, operators must install the appropriate network infrastructure for their chosen standards. Moreover, for the public individuals to access the wireless communication service, their terminals must also match the technology standards which their operators are using. Usually, one handset terminal is only applicable for only one wireless standard. Up to the present moment, there is no commercial product that can communicate in all wireless standard environments.

Much of the recent focus in the media has been on cellular mobile radio systems. These systems are categorized by high mobility, wide range and bi-directional wireless communications system. Technically, they are traditional (800-900MHz) cellular systems and the new class of personal communications networking (PCN or PCS) that operate in the 1.8 or 1.9 GHz range, respectively.

A summary of the major commerical available wireless standards is as follows:

Analog Cellular -Advanced Mobile Phone System (AMPS), Total Access Communications System (TACS), and Nordic Mobile Telephone System (NMT 450/NMT 450i/NMT 900)

Digital Cellular - GSM, TDMA (IS-54/IS54-B/IS-136), and CDMA (IS-95)

Personal Communication System (PCS) - Digital Cellular System 1800 (DCS1800), TDMA (IS-136), and CDMA (IS-95)

Cordless - CT-2, Digital European Cordless Telephone (DECT), and Personal Handyphone System (PHS)

(Refer to APPENDIX 2 for the standard and technical details.)

Wireless Phone Types

There are three basic types of wireless phones: handportables, mobiles and transportables:

Handportables - These are the smallest and lightest wireless phones available. Weights now decrease as to little as 200g, and most will fit easily into a jacket pocket.

Mobiles - These are permanently installed in a car and run off the car battery.

Transportables - Transportables can be carried from place to place, but can't be described as fully portable (weighing around 2 kg).

Although the strict classification of wireless phones are divided into the above categories, nowadays the most popular are the handportables, which represent more than 90% of the market. And most just refer to handportables as "mobile handsets" or "handsets." So in the later sections of this marketing plan, such jargon will be adopted unless otherwise specified.

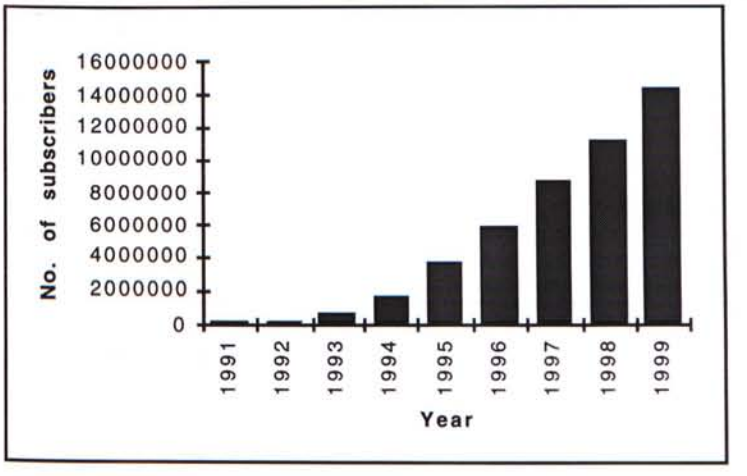
(Refer to APPENDIX 3 for more detailed descriptions.)

Wireless Telecommunication Network Markets

China has the second largest wireless subscribership in Asia and is the region's fastest growing market. China added 928,000 subscribers in 1994 and 2.06 million in 1995, with the total number of

cellular subscribers growing by over 131%, from 1.57 million at year-end 1994 to 3.74 million at year-end 1995. This tremendous growth - roughly half a million subscribers per quarter in 1995 - has enabled China to surpass Italy and Germany to become the world's fourth largest cellular market, after the United States (30 million), Japan (5.3 million), and the United Kingdom (4.5 million). Figure 2 shows the dynamic growth in China's cellular subscribership from 1991-1999:

FIG. 2 TOTAL NUMBER OF CELLULAR SUBSCRIBERS IN CHINA



Year	No. of subscribers
1991	67,560
1992	180,900
1993	643,300
1994	1,581,600
1995	3,737,650
1996	5,818,117
1997	8,611,581
1998	11,206,054
1999	14,246,496

Source: MPT statistics and Nortel forecast

Wireless Communications Equipment Market

China's mobile communications equipment market experienced tremendous growth in the 1990s. The market for mobile equipment - including cellular and paging, infrastructure, and subscriber sets - climbed from $509 million in 1991 to $4.16 billion in 1994.

FIG. 3 MOBILE NETWORK MARKET: 1991 - 1999

Year	1991	1992	1993	1994	1995	1996	1997	1998	1999
Installed base									
Cellular capacity (thousands)	190	468	1220	3528	5263	7345.6	10015.9	14247	17290
- Digital	0	0	17	537	1700	2216.3	3266	5958	8776
- Analog	190	468	1203	2991	3563	5129.3	6749.9	8289	8514
PCS capacity (thousands)	0	0	0	0	0	25	385	907	2100
Cellular sets (thousands)	65	177	639.3	1567	3737.7	5818.1	8611.6	11206.1	14246.5
- Digital	0	0	0	40	697.2	1197.2	1773	3265.8	5957.6
- Analog	67.6	180.9	643.3	1541.6	3040.5	5134.4	6838.6	7940.3	8288.9
PCS sets (thousands)	0	0	0	0	0	0	126.6	384.2	906.6
Shipments									
Cellular capacity analog (thousands)	133.9	278	735	1788	572	1566.3	1620.6	1539.1	225
Cellular capacity digital (thousands)	0	0	17	520	1163	516.3	1049.7	2692	2818
PCS capacity (thousands)	0	0	0	0	0	25	360	522	1193
Cellular sets (thousands)	31.2	112	462.3	927.7	2170.7	2593.9	2793.5	2594.5	3040.4
- Digital	0	0	0	40	657.2	500	576	1492.8	2691.9
- Analog	31.7	113.3	462.4	898.3	1498.9	2093.9	1704.2	1101.7	348.6
PCS sets (thousands)	0	0	0	0	0	0	126.6	257.6	522.4
Infrastructure market (US$M)									
- Cellular	127.2	236.3	584.1	1585.9	1011.5	1186.1	1374.3	1998.7	1358.4
- PCS	0	0	0	0	0	11.9	162.5	223.8	485.9
Subscriber set market (US$M)									
- Cellular	67.2	208.7	709.6	1013.8	1589	1467.9	1638.5	1316.6	1295.3
- PCS	0	0	0	0	0	0	54.4	94.1	162.3

Source: MPT annual report, Nortel forecast

The tremendous jump in 1994 is attributable to the introduction of GSM in China. Moreover, as Unicom and MPT continue to compete for market share and as China's cellular market continues to attract foreign carrier interest, the market should maintain a steady growth of around $4 billion each year through 1999. The largest portion of the mobile equipment market will come from the cellular sector - including infrastructure and handsets - which is expected to keep a steady growth of roughly $2.6 to $3.3 billion.

Cellular Handsets

In 1994, there were 27 mobile handset manufacturers with MPT approved network access permits, producing a total of 31 types of mobile phones. The cellular handset market grew from $67.2 million in 1991 to $1.6 billion in 1995. The market will maintain a steady growth of about $1.5 billion each year through 1999. The steady decline of handset prices will be a consistent force driving down the handset market, which is buoyed by increasing sales. TACS handsets dominate the market, although as in the infrastructure market, GSM handsets sales experienced rapid initial growth in fourth

quarter 1994 and early 1995. Although still a relatively small portion of the market, GSM handsets are expected to capture between 40% and 50% of the market by the year 2000.

(Refer to APPENDIX 4 for wireless services growth.)

CHAPTER V

MARKETING ENVIRONMENT AND TRENDS - MACRO

General China Economy

If the measure of China's overall health in 1996 is a "soft landing" after the "over-heating" in the early 1990s for the economy, then the prognosis is good. Growth sufficient to keep the forces of social instability at bay is forecasted for the first year of China's Ninth Five-Year Plan (1996 - 2000). According to an analyst, 1996 should see a GDP growth of about 10% and inflation brought down to 12%. In 1995, China's macroeconomic performance met the target roughly, with growth at under 10% and inflation at 15%. The population as of October 1995 was 1,208 million.

In the Ninth Five-Year Plan (1996-2000) unveiled in September 1995, the Chinese government indicated plans to speed up the advancement of industrial technology and promotion of scientific achievements to sustain future economic growth. In addition, efforts will be made to adjust and improve the industrial structure. The Plan also reiterated the importance of maintaining a stable social and political environment, placing emphasis on the development of the automobile, construction, electronics, and petrochemical sectors.

Tight credit and price control policies will continue well into 1996 to keep inflation in check and maintain stable economic growth. Measures to speed up agricultural development and improve industrial efficiency will be implemented. Telecommunication is one of the most important basic infrastructures for the development of the economy in China. A highly efficient and low cost communication infrastructure will fuel the economic growth, which in turn generates demand for communication services. That's why telecommunication is one of the fastest growing industries.

Telecommunication Services and Regulation

Over the past two years, a number of organizations which previously had relatively minor influence over China's telecom development have gained in importance. Prior to that time MPT was the major decision-maker in telecom policy and development. But things have changed, for example, the State Council and the State Planning Commission stepped in during 1994 to permit the licensing of alternative carriers Ji Tong and China Unicom (Lian Tong), overruling objections from MPT, which lost its monopolies on basic and cellular telephony and on data communication services in one fell swoop.

Ministry of Posts and Telecommunications (MPT)

China's Ministry of Posts and Telecommunications (MPT) continues to steer telecommunication policy through its control of network standards, licensing, public network interconnection, and its influence over supply rationalization within the national MPT/PTA apparatus. The Ministry also oversees planning, coordination, and development of interprovincial trunk facilities such as the national fiber optics backbone projects. The MPT reorganized its management structure in March 1994, in an effort to better define the role of each of its divisions, thereby strengthening and streamlining administrative processes. At present, the MPT is divided into 16 sections which handle various administrative and policy issues. Of particular regulatory importance are the following departments: The Department of Telecommunications Administration (DTA), The Department of Science and Technology (DST), The Department of Planning and Construction (DPC), and The Department of Policy and Law (DPL).

Somewhat secondary to its regulatory functions, the MPT also oversees the activities of various manufacturing concerns, R&D institutes, and telecom education academies (refer to APPENDIX 5 for the current telecom regulatory structure in China).

Directorate General of Telecommunications (DGT)

Perhaps the most notable government initiative in 1994 was the move to separate the Directorate General of Telecommunications (DGT), theoretically the national operator of telecom services, from the other organizations of the MPT. In July 1995, the DGT formally registered as a separate business entity called China P&T Directorate General of Telecommunications (known as China Telecom). In practice, however, the DGT still depends on the MPT for funding and personnel. For now, the change is only on paper. However, the long-term goal of the Chinese government is to have the MPT evolve into a regulatory body that is similar to the U.S. Federal Communications Commission, while the DGT evolves into a national operator. The DGT itself is divided into four departments - Operations, Services, Marketing, and International.

Provincial Post and Telecommunication Administration (PTAs) and Local Telecom Bureaus

In recent years, the MPT's authority has diminished considerably, yielding to the growing influence of provincial PTAs. While this change has not been primarily a result of regulatory reform, it has had a similar effect. Wealthier provinces, such as Guangdong, have taken on certain regulatory tasks, such as the setting of telephone and cellular fees within MPT guidelines, choosing network suppliers and standards, and following MPT recommendations.

Local Post & Telecommunications Bureaus (PTBs, PTTs) fall under the administrative direction of the PTAs. In provincial capitals, the administration of telecommunication has been separated from postal administrations.

State Radio Regulatory Commission

The State Radio Regulatory Commission (SRRC) is the national body responsible for radio management in China. The SRRC administers radio policy, frequency planning, and sets radio standards.

Type Approval Procedure

Starting from 1st June 1994, the Ministry of Posts and Telecommunications will adopt a countrywide unified policy to cope with the assessment and issue of public network access licenses and enforcement of approval label systems for pagers and mobile phones used and approved in public mobile communication networks. The Department of Telecommunications Administration of MPT is responsible for the execution.

Imported Pagers and Mobile Phones

Imported pagers and mobile phones should be tested and approved by batch processing. Mainland sales units should lodge applications for public network access licenses from the Department of Telecommunications Administration of MPT. Sales units should present the following information at the time of application:

- written application proposal, clearly stating the country of origin, model number, quantity, and import channel
- a photocopy of the Business Registration Certificate issued by the Commercial and Industrial Administration Department to show that the applying unit is allowed to engage in such business; for units selling mobile phones, an approval permit is required from the department-in-charge

Should the above information fulfill the requirements after assessment, the Terminal Equipment Management Office of the Department of Telecommunications Administration of MPT will appoint local Post and Telecommunications Administrations to undergo random sampling of the equipment. Testing centers will conduct examinations of selected samples according to the assignment letter from the Terminal Equipment Management Office. Type approval and approval labels will be issued for those fulfilling testing requirements.

Pagers and Mobile Phones Assembled or Manufactured in Mainland China

For pagers and mobile phones assembled or manufactured in Mainland China, after production and the final version has been approved by the Ministry or Province-level department-in -charge, manufacturers can apply for network access according to model assessment methods same as imported mobile phones.

Cellular Operators

The wireless handsets are not like other consumer products. Though they are purchased and used by the general public, they are actually complements to the services provided by the operator. Therefore, a study of operator profile, network infrastructure, and network market is important from a macroenvironmental view.

China's cellular service market has become much more competitive in recent years. While the MPT and Unicom are the only carriers licensed to operate public telecom services, the PLA's CESEC is waiting in the wings for possible future policy changes. Figure 4 profiles the cellular service operators in China, showing subscribership by network standard, from 1987 to 1995.

FIG. 4 SUBSCRIBER NUMBERS BY OPERATORS

YEAR	1987	1988	1989	1990	1991	1992	1993	1994	1995
MPT	700	9700	12100	33800	65000	177700	639300	1567000	3589360
TACS	700	9700	12100	333800	65000	177000	638000	1525000	2997200
AMPS	0	0	0	0	0	700	1300	2000	8000
GSM	0	0	0	0	0	0	0	40000	584160
Unicom	0	0	0	0	0	0	0	0	110000
GSM	0	0	0	0	0	0	0	0	110000
CESEC	0	0	0	0	0	0	0	10000	33000
AMPS	0	0	0	0	0	0	0	10000	30000
TDMA	0	0	0	0	0	0	0	0	3000
Other	0	1311	1638	2048	2560	3200	4000	4600	5290
NMT	0	1311	1638	2048	2560	3200	4000	4600	5290
Total	700	11011	13738	335848	67560	180900	643300	1581600	3737650

Source: TL960045 China Telecom Market and Network Assessment, 1996, Nortel

MPT

Until recently, the MPT is the only public cellular operator in China. It lost its monopoly status when second carrier Unicom received the official sanction to become a second network operator in mid-1994. Despite new challenges from Unicom, however, the MPT retains its dominance over all sectors of China's telecommunication market and remains the only carrier that is able to provide a full range of telecom services.

The MPT is able to maintain its monopoly over cellular network operations for so long because cellular services in China are essentially considered a basic service, and should therefore not be open to competition. However, the central MPT has little real authority over the planning and actual operation of cellular networks, which are primarily managed by provincial and local PTAs and PTTs. Currently, the MPT's most important functions in the cellular arena are approving standards and setting tariffs and fee ranges.

At year end 1995, PTA networks covered all thirty Chinese provinces and municipalities, serving 3.6 million total subscribers. MPT TACS networks have the lion's share of the market with roughly 3 million subscribers. GSM subscribership shot up in 1995 to over 580, 000 subscribers. By far the largest single PTA cellular market is Guangdong Province, which accounts for nearly 30% of total cellular subscribership. Zhejiang, Jiangsu, Liaoning, and Shangdong provinces follow at a distance, each with 4-5% of the overall market.

FIG. 5 MPT CELLULAR SUBSCRIBER BY PROVINCE

Province	YE1994 subscribers (thousands)	YE1995 subscribers (thousands)	YE1995 increase %	Province	YE1994 subscribers (thousands)	YE1995 subscribers (thousands)	YE1995 increase %
Anhui	22.6	59.9	37.34%	Liaoning	78.8	197.5	123.13%
Beijing	76.6	160.4	100.00%	Inner Mongolia	8.4	22.1	13.78%
Fujian	69.1	155	96.63%	Ningxia	3.4	7	4.36%
Gansu	9.2	18.5	11.53%	Qinghai	1.1	2.6	1.62%
Guangdong	480.1	987.7	615.77%	Shaanxi	21.1	35.1	21.88%
Guangxi	45.3	99.1	61.78%	Shandong	70.1	164.5	102.56%
Guizhou	5.8	14.1	8.79%	Shanghai	72.5	168.1	104.80%
Hainan	19.5	31.1	19.39%	Shanxi	18.1	41.3	25.75%
Hebei	39.6	120	74.81%	Sichuan	54	123	76.68%
Heilongjiang	53	132	82.29%	Tianjin	32.3	80.2	50.00%
Henan	51.5	121.7	75.87%	Xinjiang	13.4	26.9	16.77%
Hubei	41.1	124.7	77.74%	Xizang	0.7	1.4	0.87%
Hunan	36.2	121.6	75.81%	Yunan	11.4	22.1	13.78%
Jiangsu	97.7	231.8	144.51%	Zhejiang	92.2	248	154.61%
Jiangxi	11.3	31.6	19.70%				
Jilin	31.6	79.2	49.38%				

Source: PTAs report, Nortel estimate

(Refer to APPENDIX 6 for detailed provincial cellular network profile.)

Unicom

The country's second carrier, Unicom, launched four GSM cellular networks - in the cities of Beijing, Shanghai, Tianjin and Guangzhou - in July 1995. By year end 1995, the company had roughly 110,000 subscribers in nine city networks across China. The company hopes to capture 30% of China's cellular market by the year 2000.

Unicom is on the lookout for investors willing to put capital into network development. Despite China's prohibition against foreign ownership of telecom ventures, Unicom's complex organizational structure offers ways around this. Figure 6 shows Unicom's GSM installations as of year end 1995.

FIG. 6 UNICOM NETWORK CAPACITY

City	Standard	Vendor	Capacity	Description
Beijing	GSM	Siemens	25000	Cut over in July 1995
Shanghai	GSM	Siemens	20000	Cut over in July 1995
Tianjin	GSM	Siemens	15000	Cut over in July 1995
Guangdong Province	GSM	Motorola/Siemens	20000	Cut over in July 1995
Heilongjiang Province	GSM	NORTEL	15000	Cut over in 1995
Hunan Province	GSM	Nokia	25000	
Jiangsu Province	GSM	Ericsson	17000	Cut over in 1995
Shaanxi Province	GSM	NORTEL		Four cities covered
Shanxi Province	GSM		20000	Planned
Shangdong Province	GSM			With the support of Bell Canada
Zhejiang Province	GSM	NORTEL		Four cities covered

Source: Unicom annual report

CESEC

China Electronic Equipment System Engineering Company (CESEC), the telecom operating arm of the People's Liberation Army (PLA), provides telecommunication engineering and technical services to China's defense departments. CESEC controls the AMPS-A spectrum. SECES's spectrum is specifically earmarked for private use by PLA entities. CESEC itself is not licensed to operate public cellular systems, but may be allowed to sell or lease excess bandwidth to the MPT or Unicom. Not surprisingly, both the MPT and Unicom are vying for CESEC's hand in a strategic partnership.

Tariff Structure - Mobile Services

Recommended tariffs for mobile services are also set by the MPT. However, in urban centers where Unicom has been actively recruiting GSM subscribers, the PTAs have embarked upon far more aggressive pricing strategies. Until Unicom develops its local and long-distance networks, the MPT and local PTAs still have a de facto monopoly over these services, thus enabling them, through cross-subsidization, to sustain very low tariff rates in cellular services. Figure 7 shows the tariff structures for cellular.

FIG. 7 FEES AND TARIFF FOR CELLULAR SERVICE

		Connection fee	Monthly fee	Per minute fee	Handset price range
1993-1994	tariff	US$1205 (RMB10,000)	US$18 (RMB150)	US$0.06 (RMB0.5)	US$783-$1506 (RMB6500-12500)
1994-1995	tariff	US$362-$603 (RMB3000-5000)	US$6 (RMB50)	US$0.05 (RMB0.4)	US$639-$1024 (RMB5300-8500)
1995-1996	tariff	US$241-$362 (RMB2000-3000)	---	---	---

Source: MPT annual report

One of the biggest market drivers in 1994 was price competition between the two cellular operators. China's cellular rate structure has historically been very top-heavy, with hefty user fees and handset prices that has been designed to help fund network construction. Provincial operators are able to charge such high initial prices because of the overwhelming pent-up demand for service. In fact, operators often pre-sell capacity to achieve pre-cut-over lock-in rates that are reportedly as high as 30 to

40%. The initial tariffs received by operators are then used to finance the costs of network construction.

Cellular tariffs have gone sharply downward. Connection, air time, and handset fees have dropped by half since 1993. Aided by price competition from Unicom, average connection fees for cellular service dropped from over US$1200 in 1993 to about US$500 in 1994/95, and are expected to go down to less than US$300 in 1996. Monthly per minute fees have also dropped from 1993 to 1996.

Liberalization of Telecom Services

Although China continues to uphold its ban on foreign equity participation in telecom services, the sector is beginning to show signs of liberalization. The biggest change in recent years is the creation of alternative carriers in the local, long distance, mobile, and data services sectors. China Unicom Telecommunications Corporation was created in 1994 to compete directly with the MPT in local, long distance, and mobile services.

China Unicom

Perhaps the most important development in the liberalization of China's telecom market is the creation of Unicom in July 1994. After some ministerial squabbling, the State Council finally steps in to endorse the creation of Unicom over fervent objections from the MPT. Unicom plans to offer a wide variety of fixed and mobile telecom services, but is initially focusing on the cellular market. Unicom cut over service on four urban GSM networks in July 1995, making its first entry into China's telecom services market.

Liberalization of the Retail Market

Until recently, China's handset market is heavily regulated. The MPT announced liberalization plans in mid-1994 to introduce competition and lower prices. The decision to liberalize coincides with the establishment of the second carrier Unicom, which must build its own distribution system to compete with that of the MPT. Previously, all subscribers had to obtain handsets from the local PTA cellular office. Prices were high and heavily regulated at US$783 - US$1,506 (RMB6,500 - 12,500) per handset, and no rentals were issued. In the face of competitive pressure from Unicom, the MPT has lowered its handset prices to US$639 - $1,024 (RMB5,300 - 8,500).

In theory, independent retailers of handsets are now able to obtain commercial licenses by applying to the local PTA and municipal government. However, it will take some time before private retailers establish themselves in the market. PTAs will be reluctant to increase competition in their lucrative and previously monopolistic markets. Moreover, on the demand side, it will take some time for licensees to demonstrate their ability to provide reliable after-sales service to customers. Motorola is the leading handset vendor in China, but the market is becoming more competitive, as Ericsson, Nokia, Siemens, and NEC gain acceptance in the market.

China Consumer Market Size

With a total population exceeding 1.2 billion, China represents unresistable charisma to foreign retailers and manufacturers. The country's huge market has already captured the attention of major corporations around the world. However, with a low GDP per capita, only a small fraction of the huge population will join the consumer regime in buying foreign branded goods. More than two-thirds of the people are farmers or workers with an annual income of US$240. As a result, actually most foreign firms are just targeting a small fraction of the population - the four major cities: Beijing, Tianjin, Shanghai, and Guangzhou (which account for 25 million people). Some companies are more

aggressive; they target the urban resident in 32 cities with more than one million people. But this also just represents 79 million people, which is only 6.6% of the total.

However, such a thin wedge of the total Chinese consumers has a disregardable purchasing power. The richest 10% of people earn an annual average of RMB19,212 (US$2,300), which allows them a high consumption of durable and semi-durable goods. This richest portion all live in the largest cities, where the average per-capita urban income is RMB4,405, which is 30% higher than that of medium-sized cities.

Other than that, China's present and future demographics have been changed by the one-child policy started in the 1980s. Despite the moral questions and complaints, the policy is more or less successful in bringing down the birth rate from 38 per thousand (1965) to 18 today.

The implication of the one-child policy is a smaller household headcount. There has been a significant shrinkage of average urban household size to 3.28 persons. The dependency ratio thus dropped from 1.4 in 1978 to 0.95 in 1994. With fewer dependents, income earners have more discretionary income to indulge themselves. Moreover, this trend is going to persist for another ten years.

FIG. 8 SOCIAL AND DEMOGRAPHIC TRENDS

	1990	1995	2000	Annual average % change 1990-2000
Total population (billions)	1.14	1.23	1.3	1.3
Population growth rate (% pa)	1.5	1.3	1.2	1.3
Age profile (% of population)				
0-14	27.6	27	26.5	0.9
15-64	66.4	66.8	67.1	1.4
65 and above	6	6.2	6.4	2.3
Life expectancy (years)				
Male	66	67	68	n/a
Female	69	70	71	n/a
Literacy rate (% of population)	73.5	75	77	n/a
Labour force (M)	562	609	651	1.5

Source: State Statistic Bureau; Consumer Marketing in China, EIU.

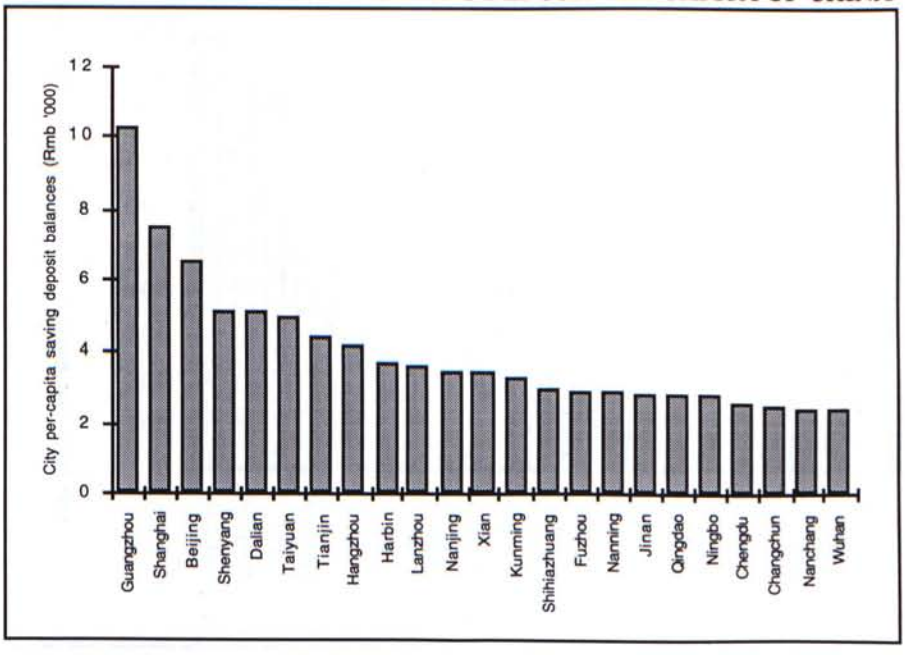
With such a demographic shift, the percentage of young people is sliding. According to research, it is predicted thta more than half of the population will be over 30 by the year 2000.

China's Growing Urbanization

Another major demographic change in China is the rapid urbanization, i.e., forty percent of the population living in the countryside, as compared with 20% or less for developed nations. Even in the urban area, the majority of the China population is spread across many small cities. Sixty percent of urban residents live in cities with fewer than 500,000 people. This is in contrast with the developed countries, in which the population is concentrated in a few megacities.

However, with the 're-opening' change started in 1978, the PRC government began to ease the rigid, control obsessed residentship system. From that time, the urban population has exploded from 172 million to 343 million. Due to rapid urbanization pace, existing cities have swelled and new ones have been created. It is estimated that 432 new cities will be created in the next 15 years. The State Statistical Bureau also forecast that the urban population will reach 36% of the total by the year 2000.

FIG. 9 SAVING DEPOSIT PER-CAPITA OF CHINA



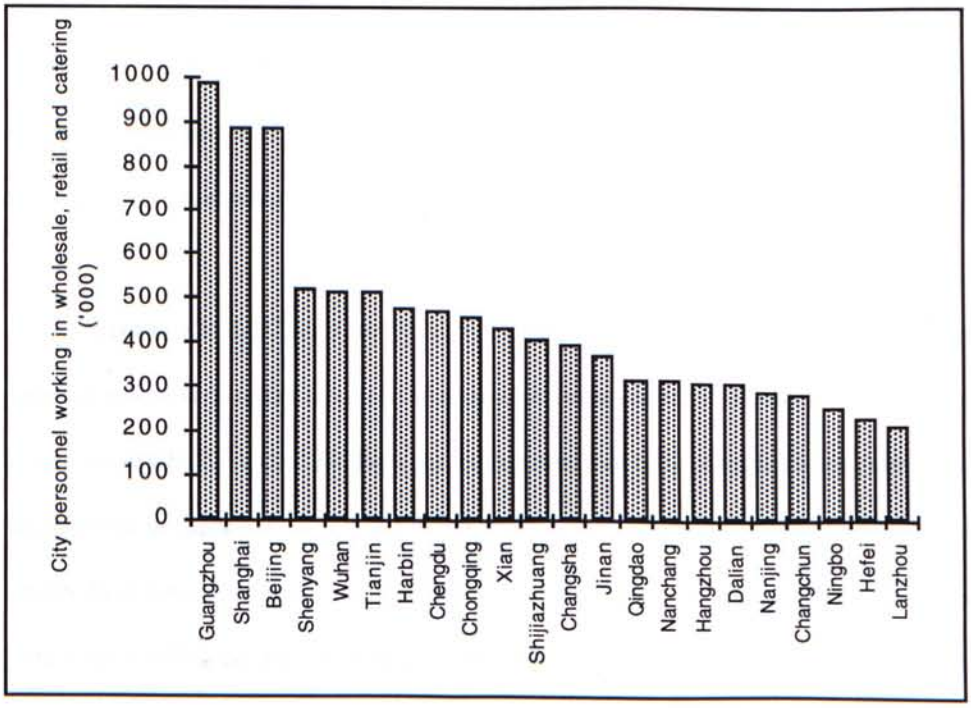
Source: Consumer Marketing in China, EIU.

FIG. 10 URBAN EXPENDITURE PERCENTAGE

Food	40.60%
Grain	5.80%
Meat, poultry, and related products	9.60%
Dairy	0.70%
Aquatic productd	2.70%
Clothing	11.10%
Household facilities, articles, and services	7.20%
Durable consumer goods for household use	4.30%
Medicine and medical services	2.40%
Transportation and communication	3.80%
Recreation, education, and cultural services	7.20%
Durable consumer goods for recreational use	1.90%
Residence and housing	5.50%
House rent	0.80%
Water, electricity, and gas	1.80%
Miscellaneous commodities	3.60%
Saving	18.60%

Source: China Statistical Yearbook, 1995

FIG. 11 CITY PERSONNEL WORKING IN WHOLESALE, RETAIL, AND CATERING



Source: Consumer Marketing in China, EIU.

Urbanization brings a cheap labour source to cities and thus stimulates their economic growth. This has further widened the income gulf between urban and rural household incomes over the last decade. In 1985, rural households earned almost 80% of their urban counterpart's incomes. But the

ratio dropped to 45% by 1994. Per-capita income and consumption spread are even wider as the household size in the countryside is larger, so there is less for each individual to spend. According to Chinese statistical data, urban residents consume about three times more than their rural counterparts (RMB3,956 vs. RMB1,087).

Cultural Forces

High economic growth for 15 years has generated optimism about the future prosperity of both individuals and the nation. Three-quarters of respondents in the EIU's survey agreed that future generations will have a better life. However, optimism about the future is not as prevalent as satisfaction with one's current life. Gallup's nationwide poll of 3,429 individuals found that only 50% were satisfied, 15% were dissatisfied, and the remainder were neither satisfied nor dissatisfied with their lives overall. The state still regulates many aspects of life, including family planning and mobility. While access to goods is accelerating, many items remain unavailable. Almost two-thirds of Chinese, the highest level among 38 countries in a study by the Centre for International Business Studies, believe that what happens to them is not their own doing.

According to the Gallup survey, 86% of the respondents believe that the "only way to make the nation competitive is to reward those who have achieved higher standards in their work and not to reward those who have not." Gallup's survey reported that 68% of respondents nationwide stated that their attitude towards life was closest to the statement, "work hard and get rich." In their zeal to acquire wealth, the Chinese are re-educating themselves about hard work. This coincides with the traditional Confucian thinking despite the communist attitude. The value of meritocracy, in contrast to the communist value of promotions based on political or economic class, also appears to be reviving across Chinese society.

Chinese society has an uncommon mix of collective and individual values. The Chinese take care of and protect an inner circle consisting of close friends and family. Outside this group, the

community can be a vicious dog-eat-dog environment. People desire to be independent and break out of the collective mold. According to the EIU survey, 86% felt it would be a good thing if people in China were free to choose their own lifestyles. In the Centre for International Business survey, just 36% felt that if "individuals are continuously taking care of their fellow human beings, the quality of life will improve for everyone," while 64% agreed that "if individuals have as much freedom as possible and the maximum opportunity to develop themselves, the quality of their lives will improve as a result."

Technological Direction

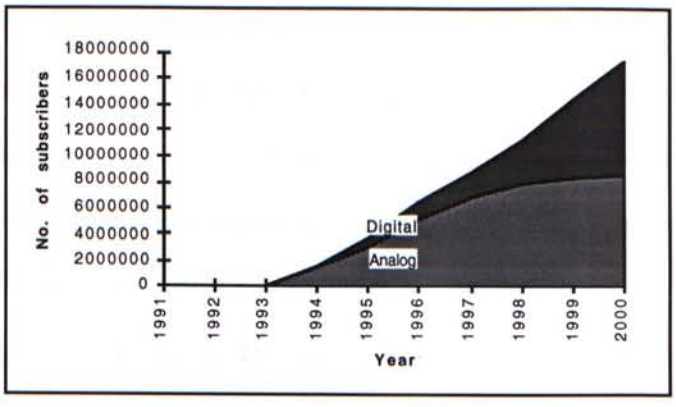
TACS - TACS is the official analog cellular standard in China, and TACS networks are currently operating in 26 of 27 Chinese provinces and all three municipalities. The introduction of national roaming services on the interconnected TACS-A and B networks will likely push demand for analog TACS service despite the steady proliferation of other standards. However, due to the introduction of the digital GSM system, the growth of TACS subscribership has slowed down, and will eventually stop in the 1998-1999 time frame.

AMPS - Thus far, only a few scattered AMPS networks have been installed throughout China, with the vast majority of these being run by CESEC. Recently, a few more AMPS/DAMPS networks have been contracted, indicating that several provinces are still interested in pursuing the technology despite the fact that the MPT has not officially sanctioned it.

GSM - The big news of 1994 and 1995 is the shift to GSM. While it will be a number of years before GSM coverage catches up to TACS in China, GSM accounted for most of the cellular capacity growth in 1995. Though there are about 1 million subscribers at present, the future of the GSM system is very promising. As forecasted by the China MPT, subscribership is increasing at a two-digit percentage each year.

The appearance of Unicom on the scene had a profound impact on China's cellular market. Unicom began by concentrating its GSM network development efforts in the major cities of Beijing, Shanghai, Tianjin and Guangzhou. Taking into account the fact that Beijing, Shanghai, and Guangdong province together account for about 45% of China's total cellular subscribers, Unicom's strategy of entering these major markets first should help it to leverage profits quickly for the development of a national network of GSM systems. Unicom plans to have 30% of China's cellular subscribers by the year 2000. MPT is also going full speed ahead with GSM networks. Digital subscribership will account for roughly half of China's cellular market by the year 2000, or an estimated 8.8 million subscribers.

FIG. 12 CELLULAR SUBSCRIBER GROWTH, 1991-2000



Year	Total Subscribers	Analog	Digital
1991	67,560	67,560	0
1992	180,900	180,900	0
1993	643,300	64,300	0
1994	1,581,600	1,581,600	40,000
1995	3,737,650	3,040,490	697,160
1996	6,331,549	5,134,369	1,197,180
1997	8,611,581	6,838,608	1,772,973
1998	11,206,054	7,940,290	3,265,764
1999	14,246,496	8,288,870	5,957,626
2000	17,288,608	8,513,330	8,775,278

Source: MPT annual report, Nortel forecast

CDMA- Despite proclamations of victory by GSM proponents, interest in CDMA reportedly remains high among the MPT elite. MPT's reluctance to take a stance on the subject of an official digital standard for China may be an indication of this interest. The success of CDMA in China will ultimately be linked to its success in markets abroad. As more and more capital is involved in GSM, it will be increasingly difficult to justify additional investment in CDMA, unless CDMA proves "market-worthy" in the United States and such neighboring markets as Hong Kong, Korea, and Singapore, all of which have already made commitments to CDMA technology. Capacity gains and AMPS migration are two of the most attractive features of CDMA. If the technology proves both technologically and economically viable, China will likely have both CDMA and GSM as its digital standards.

PCS - China's densely populated urban areas seem to be well suited for PCS technology, which operates in the 1800 MHz range and offers higher capacity but requires more base stations. Currently, however, there are no PCS networks in China, due in large part to the prohibitive costs associated with installing large numbers of small-radius base stations. Further PCS market activity is not expected until 1997-98. Much will depend on the market success of PCS in Hong Kong, where both the MPT and Unicom have entered bids to become PCS operators.

CT-2 service growth - Due to its huge urban populations, China was touted as the world's biggest potential market for CT-2 services several years ago. However, the expected boom in China's CT-2 market has not come to fruition, and will likely not be borne out. The low penetration of CT-2 can be attributed to poor coverage and the failure of the operators to differentiate telepoint from cellular, as well as a lack of support for the technology from the MPT. A common problem shared by CT-2 operators in China is inadequate coverage. The other major factor inhibiting the growth of CT-2 service is the lack of price and marketing differentiation from cellular service. Up-front costs for CT-2 service can be up to US$723 for the handset and installation fee. This, coupled with the lowering in cellular prices initiated by the MPT and Unicom in 1994, has diminished the perceived value of CT-2. The absence of any CT-2 marketing effort leads to confusion on the part of customers, whose expectations for CT-2 are formed largely by the cellular market, and are therefore unrealistically high.

PHS - The MPT is reportedly not enthusiastic about the Japanese Personal Handyphone System (PHS), a cordless access system which operates in the 1500MHz range. Minister Wu of the MPT identified three reasons why PHS should not be adopted in China: (1) PHS requires a dense network of base station antennae, which is both costly and time-consuming to install, (2) PHS does not work well if the user is moving faster than a brisk walk, and (3) the PHS standard is constricting because it does not follow internationally accepted trends and standards.

CHAPTER VI

MARKETING ENVIRONMENT AND TRENDS - MICRO

Direct and Substitute Competition

Mobile Satellite Services

China's demonstrated demand for mobile communications services, including paging and cellular, should in turn boost demand for selected mobile satellite services. As operators in China struggle to meet demand for cellular service, MSS operators can target in-country fill-in and extension services, and international roaming markets. Furthermore, strong demand for paging services in China should also fuel future demand for complementary MSS services. However, due to the relatively high service and investment costs involved and the lack of a comprehensive regulatory regime, MSS is not expected to become a major factor in China's telecom market for quite some time.

Nortel China Resources

Discussion of an organization's resources should include an assessment of its human resources, physical resources, and capital. Refer to CHAPTER II COMPANY BACKGROUND AND OBJECTIVES for a detailed description of Nortel China's situation at the present time.

In addition, information is a very important component, especially in this quickly evolving technological industry. Although Nortel China has not devoted a great deal of time and effort to the collection of primary data in the past, it has benefitted from the use of secondary sources (both internal and external) to track industry trends.

Supplier Influence

Nortel has its own manufacturing function. The sourcing of electronic components are done globally. Thus, the supplier issues are seldom a problem. Before long, products are manufactured in Canada and exported to China. With the establishment of manufacturing joint ventures in mainland China, most of the products sold to the MPT will be manufactured in China. However, Nortel does not have a wireless terminals production line in China currently. Such products are still imported.

When the product is imported from outside, the long delivery time is a major problem. It takes several months to deliver the order, which is a major concern of the customer. Large volume stocking is risky because the high tech product market is so dynamic that there will be new products coming out every quarter. The high inventory carrying cost is another reason for the just-in-time inventory policy.

Therefore the ultimate aim is to set up manufacturing joint ventures in China, so that the delivery time can be shortened. Firstly the transportation distance is much shorter. Secondly, the new plant with its high capacity can ease the pressure of existing manufacturing facilities outside China. Another important consideration is the quality control: management has to keep tight control and constantly monitor the product quality. One way to formalize the process is to be ISO-9000 compliant. In fact, all Nortel's existing manufacture plants are ISO certified. If a local plant is set up in China, it will follow the same process.

End Customers

Understanding the consumer profile is a key success factor of product marketing. Chinese consumer demographics, income spending patterns, habits, and attitudes are all essential to a successful marketing plan.

By revealing the demographics, and income spending pattern, we get hints about product decision and pricing. From the habits and attitude, we can map out the appropriate promotional and distribution mix.

China's rapid economic growth in the past decade has enriched its population. Until Deng Xiao Ping's opening of the China market, consumers were starved of consumer durables, in particular, electrical and electronic goods. The prime drivers of the consumption motive are the burgeoning income, large saving reserve, and government allowance that augment disposable incomes.

Consumer Profiles

Chinese consumers' heavy purchasing of durable goods to a certain extent comes from the savings built up prior to the late 1980s, when there were few goods to purchase.

Saving rates are high in China. According to the World Bank, gross national saving in 1993 was 40% of GNP, one of the highest levels in Asia. By 1994 each urban household had an average of RMB15,972 in savings, close to 1.5 times the average annual urban household income. Rural households, in contrast, had just RMB2,554 in savings, equal to 31% of the average rural household annual income. Also, in 1994, the average urban household saved RMB1,670, representing 15% of its income. Households in the urban centers of Guangzhou, Beijing, and Shanghai have the largest per-capita saving rate.

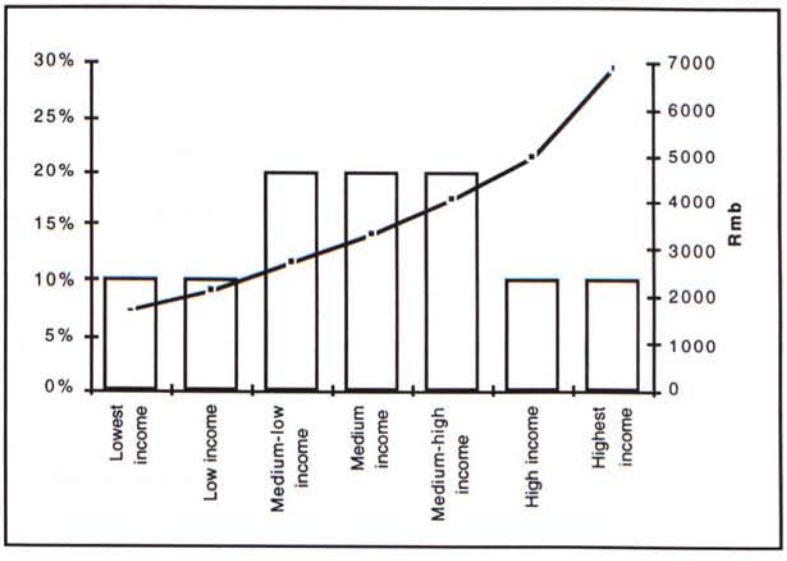
Another survey conducted in Guangzhou, Shanghai, Beijing, and Chengdu reported that product-purchase intent is highest for the following goods in descending order: telephone, stereo hi-fi, microwave oven, video-recorder, compact disc player, colour television, karaoke player, sofa, carpet, vacuum cleaner, refrigerator, and answering machine.

Besides the savings balance, there are some other factors that contribute to the difference between income and goods owned. Official records of household income usually underestimate the amount of incoming cash. Such discrepancy may as large as 30%. The sources include grey money

income, the preponderance of moonlighting, and second jobs. In addition, the government is paying various subsidies, particularly in housing, which augment disposable incomes. Most workers in state-owned enterprises may pay less than US$1 a month in rent. However, their counterparts in other Asian countries, having housing expenses which may take 30% - 40% out of their total incomes.

As a norm, there are usually many generations in a family. In such types of households there might be four working individuals and one or no dependents. With four incomes, laying out a pile of cash for consuming durables is not a big problem. Even with just one generation at home, the family structure will be two income earning adults and one child (as mentioned before). This results in a higher percentage of disposable income than for other developing countries.

FIG. 13 INCOME DISTRIBUTION IN CHINA



Source: Consumer Marketing in China, EIU.

FIG. 14 NATIONWIDE OWNERSHIP OF CONSUMER GOODS PER 100

	Local made	Foreign made		Local made	Foreign made
Bicycle	80	1	Stereo system	10	13
Electric fan	62	1	Walkman	7	5
Radio	56	2	VCR	4	8
Black and white TV	52	2	Video games	9	2
Colour TV	29	11	Electric cooker	9	2
Rice cooker	36	3	Telephone	9	9
Washing machine	34	2	Electric water heater	6	2
Refrigerator	22	3	Gas water heater	5	2
Electric hair dryer	22	2	Record cassette or CD player	5	2
Gas cooker	22	1	Motorcycle	5	1
Electric iron	20	2	Vacuum cleaner	3	3
Still camera	10	4	Motor scooter/moped	4	1

Source: Consumer Marketing in China, EIU.

Remittances and gifts from relatives abroad, most common in the south, also contribute to disposable income. In addition, China's exceptionally high real estate and automotive prices put houses and cars - two substantial but common purchases elsewhere - out of the reach of most people. This further expands the pool of income available for personal consumption of durables, clothing, and other luxuries.

Consumption Trends

In spite of a low per capita annual income (US$422 and US$216 for urban and rural households, respectively), Chinese consumers have managed to acquire a large array of consumer durables. In the past, the Chinese consumer was eager to purchase bicycles, watches, sewing machines, and radios. In the last 10 years, savings and extra income have allowed them to buy the "big six": VCRs, television sets, washing machines, cameras, refrigerators, and electric fans. According to a survey done by Gallup in 1995, 84% of households own a TV (40% own a colour TV), 58% own a radio, and 26% own a washing machine nationwide. In the cities (Beijing, Shanghai, and Guangzhou), the percentages are much higher: 97% own a colour TV, 87% own a washing machine and 80% own a refrigerator. We can see the ownership rates for TV sets, tape recorderss, washing machines, and refrigeratorss is high. Recently, a new category has arisen - the "super three": houses, telephones, and home computers. The starving for consumer electronics and electrical appliances will last at least another round.

Consumer Buying Decision Process

FIG. 15 CHINA CONSUMER BUYING ATTITUDES TOWARD DURABLES

	(%)		(%)
Plan every purchase	80	Buy on impulse	8
Buy quality, long lasting, products	63	Repeat purchase of inexpensive products	18
Listen to others before buying	58	Buy new products before other people	16
Prefer China-made products	56	Prefer foreign made products	19
Buy for usefulness rather than design	51	Buy design rather than usefulness	26
Buy at a store I can trust	50	Buy at store with lowest prices	29
Look at ads before purchasing	48	Purchase products without finding out about them first	18
Buy inexpensive products even if features limited	44	Buy top rated products with many features	29
Decide on products before visiting store	41	Usually visit two or three stores before deciding on product	41
Brand is not important	41	Buy leading brands even if expensive	30
Pay high price for quality	38	Buy inexpensive products regardless of quality	24

Source: Consumer Marketing in China, EIU.

Faced with so many brands of consumer goods, Chinese do not buy on impulse or whim. Instead, they usually seek out more information to aid their decision-making and to experiment with

different brands. From the Gallup report, 8% buy on impulse, while 80% plan every purchase. The majority of the shoppers rely on facts rather than feelings when making purchasing decisions.

Window shopping is a common way to research discretionary purchases. In high-end stores, up to 20% of the people visiting stores are just looking. Consumers also expect commercials to provide information about products and their benefits. The Gallup report found that 68% of urban residents look at advertisements and 58% of respondents listen to their friends and colleagues before making purchases.

Chinese consumers seem to share a fascination for new technology and the latest products, and as a consequence are leapfrogging to the most advanced products. Yet they want functions that are useful and priced reasonably. The proud Chinese want what American and Japanese consumers have, and are insulted if not offered the top-of-the-line. According to Gallup's national poll, it is reported that more than half of the respondents were "excited about new technology". Most urban residents would "prefer to buy high-quality, long-lasting products."

Sometimes consumers rely on price as an indicator of quality. Chinese people usually believe that quality is direct proportional to the product price. Implications for the manufacturer are: never charge too low a price if it is a high end product. For the Chinese consumer, getting a bargain and being able to brag about it to friends and family is an important consideration too. Attempting to unearth the best buy, consumers spend hours in comparison shopping, even if it means wasting a day just for a savings of RMB10. The average Chinese consumer does not have much disposable income, but is very pragmatic about how he spends it. Shoppers are generally more interested in product quality rather than appearance. A study by Gallup found that purchase decisions are almost three times as likely to be made based on functions rather than aesthetics. Nationwide, 51% of the people buy for "usefulness," while just 26% "buy for design." Compared with Americans, Chinese are almost twice as likely to purchase a product because of its functions rather than for its beauty.

Chinese consumers, to a certain extent, are brand disloyal. The sudden simultaneous appearance of so many new brands has impeded the creation of brand loyalties. Convinced that the latest products provide the newest technology, consumers tend to switch to the most recent offerings. According to EIU's report, Chinese consumers "like to learn more about new products and brands" and "like to try the latest things to keep up." Products launched early do have a name recognition advantage and can gain ownership of a niche, but they need to regularly reinvigorate themselves so that they retain a fresh vital image. This represents both costs and benefits to marketer - an opportunity for a challenger, but a threat to the market leader.

Chinese are attracted to foreign products because of the perception of better quality. But for goods of equal quality, most Chinese would choose a Chinese brand, and one produced in their province. This same chauvinism arises with products manufactured by joint-ventures and local companies. The Shanghainese, for example, might shun a joint-venture product made in Guangzhou, but not one made in Shanghai or nearby Jiangsu. Conflicting attitudes towards foreign products have much to do with the country's recent history. Many foreign products are treated as status symbols, as they are generally of higher quality and more expensive. But the Chinese are wary of foreign influence and interference. The Chinese want foreigners to help them modernize, but they do not want certain foreign attitudes that might sneak in with the technology.

Cellular Handset Market Share

Motorola is the market leader in analog handset sales, accounting for an estimated 70% of the market. Other major handset providers include Nokia (just over 10%), NEC (around 5%), and Ericsson (around 5%). Again, as in the cellular infrastructure market, the introduction of GSM will have a significant effect on the competitive landscape of the handset market. European vendors Ericsson, Siemens, and Nokia are aiming to take advantage of this opportunity to capture greater shares of the handset business. In fact, according to some informal statistics, Ericsson has been the market leader in GSM handset sales in China.

Competitors

Ericsson

Ericsson is a rare example of a telecommunication vendor which has successfully developed a large export market. With more than 100 years of development, Ericsson is now active in more than 100 countries. Total revenue for Ericsson in 1995 was US$14.8 billion. Ericsson has 66,000 employees. The company employs more than 2,300 people in R&D operations, which are carried out at some 40 research centers in 20 different countries. For Ericsson, sales into China/Hong Kong were placed in the number two position, just behind the US. For 1996, China/Hong Kong contributed 10% of the total revenue, as compared to the US's 12%. Just a year ago, China's share was just 8%, while the US was in the lead at 11%. The success of Ericsson to date was attributed to the organization's "strong" marketing orientation and its presence in 130 countries. Ericsson never had a home market and that is a blessing.

Today, Ericsson operates within virtually the entire field of telecommunication, which is mainly divided into five different business areas, namely, public telecommunications, radio communications, business networks, components, and defense systems. With a view of the fast development in the mobile telephony area, the business of radio communications has been the key area of development for Ericsson. Early in 1981, it successfully developed the first generation of mobile cellular telephones. In 1992, it introduced the first GSM system. Since then, Ericsson has been the world leader in this area, with a world market share of around 40%. Of the world's 21.6 million mobile telephone subscribers, 8.6 million were connected to the Ericsson system. As the leader of radio communications, it also aggressively explored the markets in the rest of the world, especially countries in East Asia. China, with its 1.2 billion inhabitants but only 4.7 telephone subscribers per hundred inhabitants, is ultimately one of Ericsson's largest and most important markets.

Having dominated the cellular system in China, Ericsson began to shift its attention to the sales of terminals in China since China underwent a remarkable upswing from 38,000 to 280,000 subscribers in 1992. Ericsson expects to gain 40% market share in the terminal market in 1995. Since China is the important developing market of Ericsson this year, Ericsson has prepared to vastly invest in the China market. Productivity will be enhanced by increasing production facilities through technology transfer. Besides, they are also planning to set up a joint venture in China to cope with the huge demand.

Motorola

In 1993, Motorola's total revenue was about US$17 billion. Of this, 50% was contributed by its telecom division and 31% by its semiconductor group. The company was the largest wireless equipment manufacturer in the world. Sales revenue of Motorola China was about US$1.56 billion in 1993. Motorola entered the China market in the 1980s.

Motorola is one of the most active and successful radio station suppliers in China. The company was the first foreign company to localize production of radio stations in 1991, when it granted a license for the MPT's Huangzhou Communications Equipment Factory to begin assembling TACS infrastructure equipment. The Huangzhou plant also manufactures handsets for both the local market and export.

Motorola's sales in the PRC and Hong Kong have shattered expectations, nearly doubling over two years to reach $3.2 billion in 1995 - almost 12% of the corporation's worldwide revenues. The company declines to break down those figures by product line, but cellular phones account for a substantial chunk, and the potential market for these handy gadgets is enormous - three million new cellular phones a year until the end of the decade.

Motorola's first hit with Chinese consumers was the inexpensive paging device, a market which Motorola more or less created. But it is the cell phone that really made "Motorola" become for a time the most popular name for the device in northern China, as Kleenex is for tissue paper.

Motorola still has incredible brand equity in the cellular market, and dominates the Chinese market for analog handsets, with an estimated 40% to 50% share. However, many of the new users, be they bankers or provincial entrepreneurs, are turning away from analog phones to the newer digital technology. Here Motorola is less dominant and is locked into fierce competition with Ericsson and Nokia.

Nokia

Nokia, one of the big three in the cellular industry with Ericsson and Motorola, has come a long way since its humble beginning as a sawmill company. Nokia has undergone a corporate restructuring, having sold all of its traditional businesses to concentrate on the telecommunication sector. It now has a mobile division that focuses on cellular and wireless products and a telecommunication arm that concentrates on the infrastructure aspects. Last year, the Nokia group recorded total net sales of US$8.4 billion. Contributing to this figure are the Nokia Mobile group (43%), Nokia Telecommunications (27%), and Nokia General (29%). In addition, the total Asia-Pacific sales contributed 19% of the total.

Nokia's sales are now reported in more than 120 countries and it has production plants in 14 countries. With a worldwide staffing of 33,800, Nokia currently focuses on three main lines of products:

- mobile phones, and cellular data products
- digital exchanges and telecommunication networks
- satellite and cable receivers

Nokia has sales and marketing representatives in 14 countries and manufacturing plants in South Korea, China and Hong Kong (aside from Finland and the US). Singapore is the regional headquarters, and the R&D centers are in China, Japan, and Australia. In China, 1995's net sales were US$265 million. Nokia has established 5 joint ventures in the country, with 30-50% market share in various regions and 8 GSM networks in 1996.

Nokia wants an image as a dynamic, flexible, and market-driven company that is taking on the biggest telecommunication giants. Nokia believes that as cellular phones turn into mass market items - even fashion accessories - marketing has became increasingly important, and branding is key. The days of blanket marketing are gone. Market stratification means aiming different products at different customers according to their profession, income, sex, and age.

Cellular Handsets in China (Competitive Products in the Market)

There are more than 40 types of mobile handsets available in China market. Of these, the majority are TACS standard and GSM standard handset. Most of them are approved by MPT and the remains are under approval testing. Handsets of other standards (e.g., AMPS, TDMA, CT-2) are of minority. In the TACS category, there are a lot of brand names. However, due to its early entry, Motorola is the dominant player. On the other hand, the situation of GSM handset market is more complicated. Although the major players are still Motorola and Ericsson, other suppliers like: Nokia, Siemens, NEC, Panasonic and Alcatel should not be neglected.

(Refer to APPENDIX 7 for a detail list of popular wireless handset in China market.)

Nortel Wireless Handset Product Portfolio

Nortel currently has the following types of wireless handset products to offer:

1. Companion 3030 CT-2 handset - A handset that operates in CT-2 standard. It weights about 145g. This handset is solely designed and developed by Nortel. The dimensions are: 129mm X 55mm X 26mm. It has a maximum talk time of 8 hours and standby time of 80 hours.

2. TDMA D800 handset - This handset operates in the TDMA800 standard. It is original developed for the North American market. The handset weights 300g. The physical dimensions are: 160mm X 60mm X 34mm.

3. N901 GSM handset (low end, will be discontinued soon) - This handset operates in the GSM 900MHz standard. It is the first generation of GSM handset that Nortel sells. However, due to its bulky size and heavy weight, it will be retire from the market soon. Its size is: 160mm X 55mm X 30mm and weight is 300g.

4. N911 GSM handset - This is the second generation of GSM handset market by Nortel. The original design and development is done by AEG. After Nortel acquired AEG, the handset is market under Nortel's name. This handset weighs 225g and its dimensions are: 130mm X 57 mm X 23mm. The other details are presented in later sections.

5. N1811 PCS handset - It is a modified version of the N911 handset. This handset operates in PCS standard at 1800Mhz frequency. The physical attributes are exactly the same as N911 handset. However, with less power consumption, the standby time and talk time are much longer.

6. C800/1800 CDMA handset (under development, available in early 1998) - This handset is designed to operate in CDMA standard. There will also be different versions that adopt different communication frequencies. Prototype is not available yet. Commercial product is expected to be ready by April 1998.

CHAPTER VII

SWOT ANALYSIS OF NORTEL

Strengths	Weaknesses
• Well established China operations • Well proven GSM and PCS handsets, sold in many markets • 7 Joint Ventures set up in China • 9% market share of GSM network infrastructure • Presence in 11 provinces • Particularly good relationship with Beijing, Shanghai, and Guangdong PTA Bureaus • Product strength • In-country R&D commitment: resources for future evolution • North American manufacturer: perceived as good quality in technology goods	• No previous experience in China consumer (handset) market • Brand image relatively new to Chinese consumer • No previous reference in China • Have only digital cellular handsets (no analog) • No high end products (only mid-range products) • No existing distributor and retailer network • No third party OEM accessories • May have a high cost structure due to no local manufacturing
Opportunities	**Threats**
• Boom of wireless communication market in China according to both historical data and forecasts • Lack of basic telephone service: people use wireless phones as substitution • Rapid growth of GSM cellulars lead to decline of analog cellulars • Liberalization of telecom market in China: emergence of 2nd carrier (Unicom) • Decrease of tariff stimulates market demand • China urbanization increases the need for wireless communication	• More and more vendors enter the market: Samsung, Alcatel, Mitsubishi, Philips, and also other OEM phones: SONY, B&O, Bosch, Kenwood, etc. • Lack of fixed line basic telephone service: no one to call • Though GSM will be main trend, there are other standards upcoming (e.g., CDMA, PCS) that will divert the demand • Low GDP per capita, not many people can afford wireless phone (but large savings and relatively high disposable incomes) • Tight product approval procedures

The last page basically summarize the opportunities and threats Nortel China facing as well as the strength and weakness Nortel China possess. The summary is based on a systematic analysis of information presented in previous sections.

To consolidate further, the major opportunity is the boom of cellular services, especially GSM, in the next few years. In fact, this is a global trend as well. The major threat is the fierce competition in China. However, this is nothing special to experienced marketers as every profitable business is like that. On the competency side, Nortel China probably has good products and enough resources in both short and long term. The major weaknesses are that Nortel China does not have well established brand name and image in consumer market; and no distribution network is set up yet.

In conclusion, it is still a fair game to Nortel China. Threats and weaknesses can be overcome with careful planning and good strategies. Success is really depends on how much effort and investment Nortel China is going to commit.

CHAPTER VIII

STRATEGIES

Marketing Objectives and Strategies

A firm's market objectives can be simplified to two dimensions - products and markets. To put it even more simply, the framework is about what is sold (the product), and to whom it is sold (the market). The four possible courses of action are:

1. Selling existing products to existing markets
2. Extending existing products to new markets
3. Developing new products for existing markets
4. Developing new products for new markets

With respect to different product portfolio and market conditions, companies will need to adopt different strategies and the efforts made will be different too. In the captioned situation, it is no doubt that China is considered as a new market for Nortel's wireless terminal product line. Then the next question probably is to chose among options 2 and 4 - using existing products or creating new products. An obvious answer is to use existing products, which can minimize the cost and risk. And also this allows fast deployment. Based on a more detailed analysis of market potential and product technical aspects presented in later sections, "extending existing products to new markets" proves to be the most appropriate strategy in the China market environment.

Market Potential

In the MARKET ENVIRONMENT section (refer to Figure 12), it has been shown that the market potential from 1997 to 2000 is :

Standard	Handset market potential	
TACS	3379K sets	
GSM	7578K sets	
PCS	905K sets	(From Figure 3, year 1997 to 1999)
CDMA	unknown	

There are already many vendors offering analog TACS handsets in China. The price level is also very low (dropped from RMB12,000 in 1990 to RMB3,000 in 1995). Although the number of analog TACS handsets is expected to grow, the growth rate is very low, and the market is forecasted to be flat by 1999. Applying the product life cycle, the product is at the maturity stage, which does not justify more investment in R&D.

On the other hand, it is seen that GSM has a potential volume of 600K in 1997 and 1.5 million sets by 1998. So, GSM is really a "Star" business in the near future. The total potential volume is about 7.6 million sets (from 1997 to 2000). With an averaged retail price of US$500 per set, the total market size is estimated to be US$3.8 billion.

Nortel's Position

Cellular handsets, once a sign of affluence, are moving into the realm of mass consumer markets. Manufacturing economies of scale, technical advances, and world-wide demand are pushing prices down. Like other consumer electronics products, cellular handsets break or are misplaced. Some customers upgrade their sets for better quality models, as the average price of handsets continue to fall,

particularly for lighter, digital models with more features. Many analog cellular customers will replace analog handsets with the latest digital versions.

Although Nortel's product strategy is to provide all the main technologies to its customers, it only has a few types of cellular handsets. CT-2, TDMA, CDMA, GSM, and PCS handsets are included in its global product portfolio (Nortel does not has TACS, AMPS, PHS, or DECT standard handsets).

With reference to the China market, there are several different cellular standards in China, and the two main streams are analog TACS and digital GSM standards. The other standards are either in the minority or are not mature enough for mass deployment. The major operator is still the MPT, and possibly provincial PTAs in the next few years. Therefore, it seems the best and only product fit from Nortel is the N911 GSM handset.

Digital GSM cellular is in the initial stage of rapid growth, while the analog TACS is in the maturity stage and has startsd to decline. All other competitors' products are in the later stages of the product life cycle, which they have a very low cost structure. Therefore, it is not wise for Nortel to start from zero and initiate a new R&D program to develop a TACS phone. Moreover, with the second operator (Unicom) adopting a GSM standard, this creates an additional demand for the GSM handset. In addition, within the next five years, it is believed that more and more TACS subscribers will upgrade to GSM, thus creating a large replacement market. As a result, the product decision for Nortel should be to introduce the N911 GSM phone into the China market.

Target Customer

Since Nortel is inexperienced in brand management and consumer product selling in China, a major investment in setting up its own retail network nationwide is not only risky but also unwise. Fortunately, wireless communication service relies completely on the telecommunication operators

which are the PTAs in China. They are also responsible for selling handset terminals to end users too. In some cities/provinces (like Beijing), PTA has monopoly control of wireless communication services. In order to subscribe to the service, the consumer must purchase his first handset from BTA (Beijing Telecom Administration Bureau). BTA will not allow subscriptions from handsets which did not originate from them. Therefore, the most obvious and easiest way to start is to utilize PTAs as the primary distribution channel. So, although the end user is the general public, the customer/target market in question will be the distributor and wholesaler. In fact, PTA acts as customer, distributor, and even business partner.

In this case, Nortel should first focus on building distributorships and sell the handsets to prime distributors (the PTAs) as a beginning point.

This is based on three reasons:

- Strategically, PTA is still the monopolist of telecom services, they have the regulatory and political power to control all the equipment in their network. It is better not to jeopardize the relationship with them by threatening their retail business without acknowledging them and inviting their participation.
- Economically, though the retail market has been liberalized, there are few retailers that can establish their reputations. As a result, PTA is still the most reliable retailer in consumers' eyes, and is perceived as an efficient distributor.
- Technically, many cellular phone users are business entrepreneurs or government officials without much technical knowledge. The advice from PTA will heavily affect their buying decision. So efficient promotion and liaison with PTA officials is worthwhile in increasing end user sales. The most effective and efficient way is to invite PTAs as distributors.

Therefore, Nortel will not sell its handsets directly to the end customers. Instead, all sales will go through distributors.

On the other hand, merely selling to PTAs by using a "push" strategy is not enough. Nortel should also use a "pull" strategy from the other end of the channel. This essentially involves tackling end users and stimulating their demand. Details are included in the promotional section.

Target Markets by Geographic Location

China is not one market, it is two: an urban and a rural market. Data on consumer income, ownership, and attitudes reveal a huge gulf between consumers living in the cities and in the countryside. Given urban consumers' greater wealth and sophistication, most foreign companies focus on China's 343 million person urban market. To start, most companies aim to sell in China's three main cities of Guangzhou, Beijing, and Shanghai. These cities possess the wealthiest and most sophisticated consumers and the nation's most modern retail outlets.

Beijing

China's capital, Beijing, is the country's political decision-making center as well as a major commercial hub. The city has traditionally served as a model of progress and modernization for the rest of China, a fact reflected in its strong infrastructure. An ever-growing legion of foreign companies rub

shoulders with a myriad of Chinese central and city government offices, creating tremendous demand for telecom services ranging from basic telephone service to high speed data communication. The demand for services among Beijing's 11 million inhabitants, as well as strong central government support, has meant that telecom investment in Beijing is exceptionally high, making the city a prize for suppliers.

Beijing is one of the leading cities in China in terms of telecom service and revenue volume, as well as investment. In 1994, the Beijing Telecommunications Administration had a total traffic volume of US$432 million, up from US$311 million in 1993. Operating revenues reached US$466 million in 1994, up from US$304 million in 1993. BTA announced in February 1995 that it intended to invest close to US$640 million to expand the city's telecom infrastructure in 1995. According to BTA plans, switching capacity in Beijing will reach 7 million by 2000, and there will be 42 phones for every 100 people in the metropolitan area.

Cellular network

Beijing added 44,900 new cellular subscribers in 1994, putting it fifth in terms of new subscribers added, as compared with the other provinces. Total cellular subscribers in Beijing at year-end 1994 was 77,000. Eighty thousand new subscribers signed on in 1995. Currently, the bulk of Beijing's cellular subscribers are on the city's two analog networks. Under a contract signed in May 1994, Motorola and Nokia provided BTA with the city's first GSM network. As of July 1995, BTA's GSM network had only 10,000 subscribers, but was growing at a rapid pace. BTA expected 55,000 new subscribers to sign on to the GSM network in 1997. Besides, China Unicom has already cut over a GSM cellular network in Beijing with a capacity of roughly 25,000 subscribers.

Handset prices in Beijing have dropped drastically over the past year, largely because of expected competition from Unicom, as well as the increased realization that uptake will be faster if prices are lower.

Strategic relationship

The current Nortel China and China Holding Company headquarters are located in Beijing. Therefore, resources and office facilities are not a problem. In fact, the majority of the sales and marketing team is located in Beijing. Nortel has installed more than 500K telephone lines for BTA. Besides, Nortel has also won two important projects, namely, Signal Transfer Point and Intelligent Network, from BTA. So Nortel's relationship with BTA is in excellent shape. A partnership type of cooperation has been established since 1993. On the R&D side, BUPT - the R&D joint venture with Beijing Telecom University - is also in Beijing too. Being the capital, Beijing serves as an example to other cities in all disciplines. Seeing the economic and strategic importance, as well as Nortel's good relations with BTA, indicating that Beijing should be the first market to tackle.

Shanghai

The port city of Shanghai is a key financial and commercial center in China. The city is home to China's nascent stock exchange and a number of important high technology manufacturers. In recent years, Shanghai has led the rapid economic development of the Yangtze River Delta region, which has a total population of 200 million. Shanghai itself has 13 million inhabitants, and covers an area of 6.341 sq. km. The city is a major high technology production center.

At year end 1994, 1.58 million Shanghai inhabitants had telephones lines. The Shanghai Post and Telecommunications Administration (SPTA) gained 500,148 new telephone subscribers in 1994, and Shanghai also added 31,700 new cellular subscribers in 1994. In 1994, total telecom traffic volume was US$472 million, an increase of US$12.8 million from 1993.

Cellular network

Shanghai had 72,378 mobile subscribers at year end 1994. In the first six months of 1995, the city added 47,546 new subscribers. Shanghai's analog networks had a combined capacity of 176,400 at year end 1994. SPTA's GSM network, which was put into service in 1995, uses Siemens and Alcatel

equipment, and has the capacity to support roughly 50,000 subscribers. The network capacity was to be expanded further, possibly by as many as 200,000 subscribers, depending on demand. Telecommunications was designated as a "pillar industry" by the Shanghai municipal government. Cellular subscribers are about 300K by end 1996, and is expected to climb to 5 million by the year 2000. Shanghai was one of four cities which Unicom chose to be included in the first phase of its cellular development program. Unicom put into service a 25,000 subscriber GSM network in Shanghai in July 1995. It is expected that a total of 60,000 GSM subscribers will be added in 1997.

Strategic relationship

Nortel has a sales office in Shanghai which looks after all the China central accounts. Manpower resources and office facilities should not be a problem in handling additional handset distribution activities. Besides a sales office, Nortel has two joint ventures in Shanghai: the Shanghai Nortel Semiconductor Corporation and the Advance Semiconductor Manufacturing Corporation. On the telecommunication bureau side, Nortel has installed 200K telephone lines and won the strategic Signal Transfer Point project with the Shanghai PTA. Therefore, the relationship with the Shanghai PTA, though not excellent, is still good. It seems that the Shanghai PTA is quite willing to partner with Nortel in distributing the N911 handset.

Guangzhou

Guangdong province is burgeoning with economic activity. The province has a land area of 177,600 sq. km and a population of 66 million. The province is highly urbanized: cities and towns in Guangdong have a combined population of over 22 million, accounting for 33% of the total provincial population.

The provincial capital, Guangzhou, has an urban population of roughly 3.5 million inhabitants and a "floating" population of about 2 million. Guangzhou consistently ranks among the leading cities in terms of economic growth, and leads the country in nearly all aspects of telecom development. In particular, Guangzhou far exceeds all provinces in the number of cellular subscribers. A combination of

factors - namely, proximity to Hong Kong, economic prosperity, and seemingly insatiable demand for telecom services - has put Guangdong at the forefront of telecom technology.

Cellular network

As of mid-1996, the city had roughly 1 million urban fixed lines (telephone penetration rate of 28%). The number of cellular subscribers by year end 1996 is about 200K analog and 200K GSM digital. The city's cellular capacity ranked among the highest in the country. Besides, in the provincial level, Guangdong is the largest cellular handset market in China, which accounts for 30% of the total.

Adding to the cellular capacity of the province, Unicom recently installed a GSM network in Guangzhou. The network cut over for commercial service in July 1995, with an initial capacity of about 20,000 subscribers. In anticipation of Unicom's entry into the market, GPTA announced a drastic lowering of fees in May 1995. Handset prices were lowered by about 30% across the board.

Strategic relationship

Nortel China has a sales office in Guangzhou city. Besides, its largest joint venture in China, GDNT, is also located in Guangdong province. In fact, the Guangdong PTA is also one of the joint venture partners. In addition, Nortel had several joint development programs with the Guangdong PTA (for example, a Network Management System for Guangdong) in the past few years. With more than US$30M sales per year, Guangdong is definitely a strategic account for Nortel, both in terms of sales and partnership. Given the well-established relationship with the Guangdong PTA, choosing Guangzhou as one of the first trial markets should not be any problem.

Target Markets by Demographics

Research shows that consumers purchasing foreign products, particularly more expensive consumer durables, have higher incomes than non-purchasers. They also tend to be younger. Who are

the rich in China? They typically include people who have high positions in government and/or benefit from their parent's high positions, owners of private enterprises, sole traderss and holders of senior management or technical positions in foreign-invested enterprises. Market research has revealed that people's identities and values are correlated with the types of institutions they are working for. Not surprisingly, individuals who are working in wholly foreign-owned enterprises and joint ventures tend to be more progressive in their outlook and are more interested in purchasing foreign products.

One market research firm has segmented consumers into eight types according to age, income, type of job, and social and consumer values. Their research shows that purchasers of foreign consumer goods mostly come from only two segments representing just 22% of the urban population of China's main cities: the "young independents" and the "new middle-age bourgeoisie," each accounting for 11%.

The "young independents" are mostly aged 18-34, highly educated, and have higher than average incomes. This segment contains almost double the percentage of people working in foreign-invested companies than the total population. "Young independents" tend to be more open-minded and appearance conscious. They are more likely to be risk takers, are innovative in purchasing behaviour, and tend to purchase prestige products with top quality and price. The young people composing this segment tend to be more sophisticated buyers and more appreciative of brand name products.

"New middle-age bourgeoisie" are mostly defined by their attitudes rather than their income and education, which are roughly average for the population. This segment is conventional and traditional in its values, respecting status, discipline, and authority, but they tend to be early adopters of affordable new products. Compared with the other seven segments, the "new middle-age bourgeoisie" contain the greatest percentage of people who like to buy China- made products. Nonetheless, they are also more likely to consider imported products to be of higher quality and, along with "young independents," more willing to pay for imported products. The "new middle-age bourgeoisie" are more

eager to learn about new products and brands, to give advice to others about what products and brands to purchase, and to want to have something that others admire.

In viewing these two categories of people, Nortel's advertisements should focus on these messages: imported goods, high technology firm, top quality, leader in telecom, advanced products, and change. This will help to promote the brand and product image in the consumers' minds.

Competitive/Differential Advantages

Although there are more than 20 models of GSM handset in the China market, only 15 of them are considered popular with active promotion. They are all from major vendors like Motorola, Ericsson, Nokia, and Siemens. In order to position N911 handset, a detail understanding of competitors' products is very important. Therefore, a detailed list of competitors' GSM handsets characteristics is given in APPENDIX 8 for reference.

After the competitors' product profiles are identified, then it is time to determine a appropriate strategy to compete. Usually, there are five possible positions for an organization.

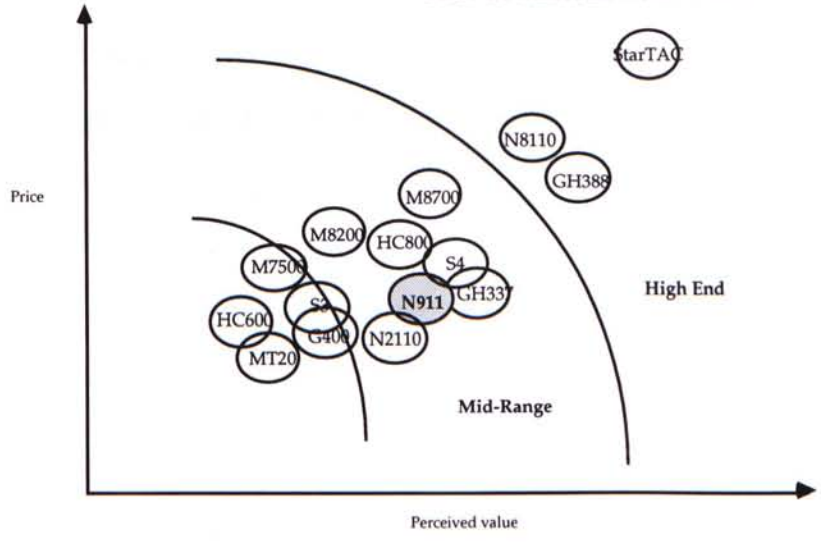
- market leader
- market challenger
- fast mover
- market follower
- market nicher

Obviously Nortel 's product offer (N911) is not at the high end. Besides, the other supporting services and brand images are not strong either. Regarding its market position, Nortel is definitely not a market leader. In fact, Nortel's position is rather weak in the cellular handset business. The strategy adopted should be a market challenger's role. Nortel should displace a few percent market share from its competitors and create its brand awareness. Nortel should first gain market acceptance and reputation,

and then build up its image in the consumer market area. The strategic goal is therefore more important than the profit maximization goal.

According to a survey done by an internal agent in Europe, the following perceptual map was drawn:

FIG. 16 PERCEPTUAL MAP



It is found that N911 was perceived as a mid-range product. So all the marketing decisions and effort should be focused in that direction. In this category, the major competitors are the MT20, GA337, N2110, M8200, S4, and HC800.

The principles of offensive warfare are particularly relevant to companies in a non-market leading position, which are challenging aggressively for additional market share. Launching the attack on a narrow front tends to increase the chances of success. The challenger should be sure that it has the resources to sustain the attack for as long as necessary. Following are some common tactics:

- Head to head
- Attack weak points
- Adopt a multi-pronged strategy

It is recommended that Nortel should attack Motorola, Ericsson, Nokia, Alcatel, Siemens, and Mitsubishi's relatively weak points. This will be the mid-range product offers. The appropriate strategy is to steal a few percent market share from these competitors. The focus area is the mid-range product spectrum. To attack "head to head" is quite impossible, as the product is not ready, and brand image is not strong.

To help the sales and marketing people in competitor differentiation, the respective competitive analyses are formulated and attached in APPENDIX 9.

CHAPTER IX

MARKETING PROGRAM

Product

Cellular handsets are fast moving products. They are characterized by the following characteristics:

- regarded as high technology product
- high sales value per unit, usually with high gross profit margin
- short product life cycle time (1 to 2 years)
- highly dependent on supporting services and accessories
- regarded as a major purchasing decision by end user

There are three levels of a product to consider: the core product, actual products and augmented product. The core product is the benefit or service recognized and desired by the target customer. The actual product is a composite of "real" attributes, including product features, quality, capabilities, design, packaging, and brand name. The augmented product aspects are the 'softer', service-oriented issues which help ease the purchase and use of a product, e.g., delivery and credit, installation, after-sales support, and involvement of personnel.

According to the directions outlined in the strategy section, considering all the internal and external factors, the only Nortel product fit for the China wireless handset market is the N911 GSM.

Core Product

The N911 GSM handset provides benefits of two way wireless communication to the end user under radio network coverage. Such a capability is the core product. The actual communication service is not part of the product, and shall be provided by the network operator.

Tangible Product

The actual product includes the physical N911 handset and its features, package, and accessories.

N911 has the following technical specification s:

- GSM Class — 4 (3 with Booster)
- Power Output — 2W (5W with Booster)
- Display — 4 x 12 Alpha Numeric plus 1 x 6 icons
- Dimensions — 13 x 5.7 x 2.3 cm
- Weight — 225 gm (with Standard Battery)
- Standby Times* — 35 hours High Cap (standard)
  54 hours Very High-Cap
- Talk Times — 1h40 mins Standard
  2h40 mins Very High-Cap
- Charge Time — 90 mins
- Lightweight AC Charger
- ISO SIM Card

The basic kit consists of - the Nortel N911 handset , NiMH battery, lightweight travel charger with standard European plug, belt clip and user manual (English).

Together with the core product, necessary optional kits are also available to enhance the capabilities. Although sales of the accessory kits are not going to be high, they reflect an image that the phone is advanced with a complete product portfolio. They are more for symbolic than practical purposes.

Description	Code
Standard Basic Kit - 1	53 1911 709 00
Standard Basic Kit - 2	53 1911 729 00
Desktop Charger	53 1860 751 00
Quick Car Kit	53 1860 740 00
Mini Car Kit	53 1911 785 00
Handsfree Car Kit	53 1860 733 00
Booster Handsfree Kit	53 1860 737 00
Cigarette Lighter Cable	53 1860 623 00
Loudspeaker	53 1744 665 00
Booster	53 1860 840 00
850mAH Battery	53 1911 060 00
550mAH Battery	53 1911 050 00
Flip Cover	53 1911 065 01

(Refer to APPENDIX 10 for description of the optional kits.)

Augmented Product

Telecommunication service - The actual telecommunication service is operated by the Post and Telecommunication Administration Bureau in China. It is therefore not included in the product.

Repair & Return service - For the support service, Nortel should provide warranty through the distributors. Such service is called Return & Repair (R&R). Whenever the customer has a faulty unit, he can take it back to the distributor, which is the PTA, in this case. The distributor will loan a normal functioning one to the consumer. Then the PTA will return the faulty one to Nortel for repair. After repair, Nortel will return the set back to the PTA and charge them if it is out of warranty. PTA should then return the handset to its end customer. Regional offices and depots will be used as maintenance centers to collect handsets.

Warranty - Each N911 handset includes a one-year warranty. If the handset unit fails during the warranty period (not because of improper use), then the repair service is free of charge. The handling should be by the distributor also. That is, end customers will take the faulty sets back to the distributors/retailers. Nortel will then collect the faulty units in bulk from the distributors/retailers.

Trade-in program - It is suggested to have a trade-in program that allows TACS handset users to upgrade the sets to N911 with special discount. Since Nortel is not directly involved in the retail sales, the program should be jointly held with the distributors. Details are documented in the promotional section.

End user training - After the product is launched, sessions of end user training classes (each about 1/2 hour long) will be held regularly (suggested once a week). The primary aim is to teach the user to familiarize himself with and operate the handset. The secondary aim is to promote the corporate image among the consumer sector and to show Nortel's commitment to the handset business.

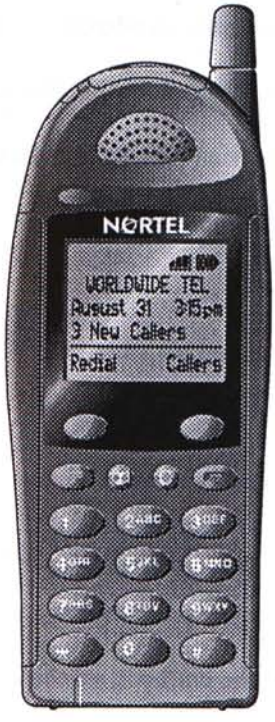
Product Evolution

According to trial feedback, the N911 has several areas that need improvement:

- not a high end product: Chinese customers like to buy the most advanced goods though they cannot and do not know how to fully utilize them.
- the set is heavy, portable phones are getting lighter. Five years ago, analog portable phones averaged 20.18 ounces. Today's phones generally weigh in below 250g. Motorola's latest StarTAC weighs only 130g.
- limited battery life
- not stylish when compared with some high end handsets
- just average reception quality
- not enough OEM third party accessories

With the advances in digital technology, handset capabilities are, in some cases, exceeding fixed line offerings. Not only are these handsets light, they provide increasingly better voice quality, advanced service features, and will allow for standby times of 30 to 60 hours. New handsets require lower power.

In fact, the above findings provided feedback to the R & D division as the input for next generation mobiles. After careful evolution and investigation, a program had been put in place to develop the next generation of Nortel mobiles. The improvements and characteristics are as follows:



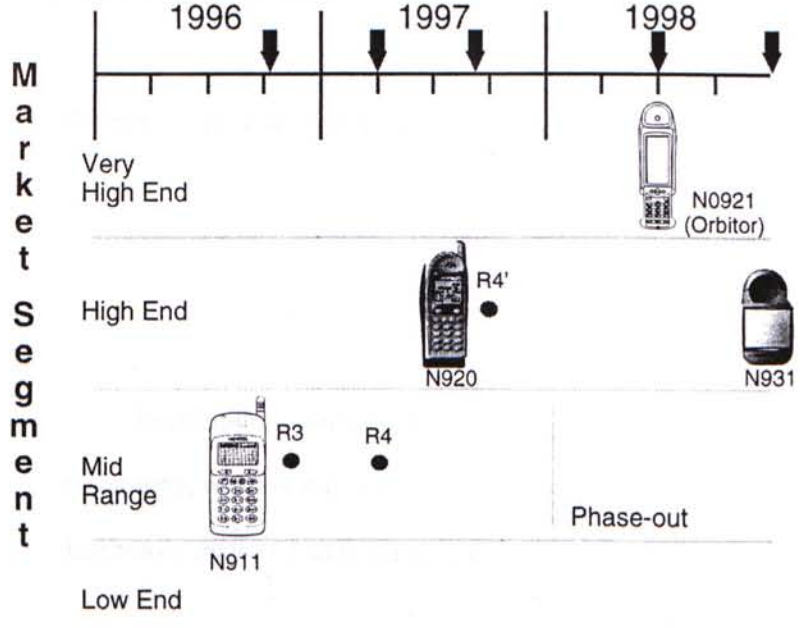
Physical Packaging & Man Machine Interface
- Aesthetic Design
- Optimal Hand Fitting
- Two Context-Sensitive Soft Keys

Handset Audio
- Optimal Acoustical Design
- Noise Cancellation Microphone
- Sophisticated Enhancements to

Voice Processing
- Proprietary Equalizer Algorithms
- Best Radio Performance

Free Hand Audio
- Appropriate Loudspeaker
- Optimized Mechanical Design
- Build-in Processing Resources
- Automatic Safety Over-ride

Stand-by Efficiency
- Very High Logic Integration
- Optimized System Architecture



Hardware Definition	
N911	225g, 130mm, 2h40/54h 4 Lines Alpha Display
N920	120g, 135mm, 3.5h/200h, 4 Lines Alpha Display, Li Battery, Freehand Audio, New Accessories
N0921	Touch screen, graphics, voice, data, Internet + PDA Concept
N931	Touch screen, voice, and text

Software Releases	
R3	Callerlog +Data/Fax T/NT 9.6+ SMS-MO + AoCi
R4	R3 + SMS-CB , FDN
R4'	PhII + Remote SMS+MPTY + SIMlock

Distribution

The place ingredient of the marketing mix concerns distribution issues: the activities that make the products available to customers. A key decision for the business is the selection of an appropriate channel. The adopted channel must lead to satisfied customers, adequate profit margins, and minimal bureaucracy. Related to this issue are concerns about power, conflict, and control.

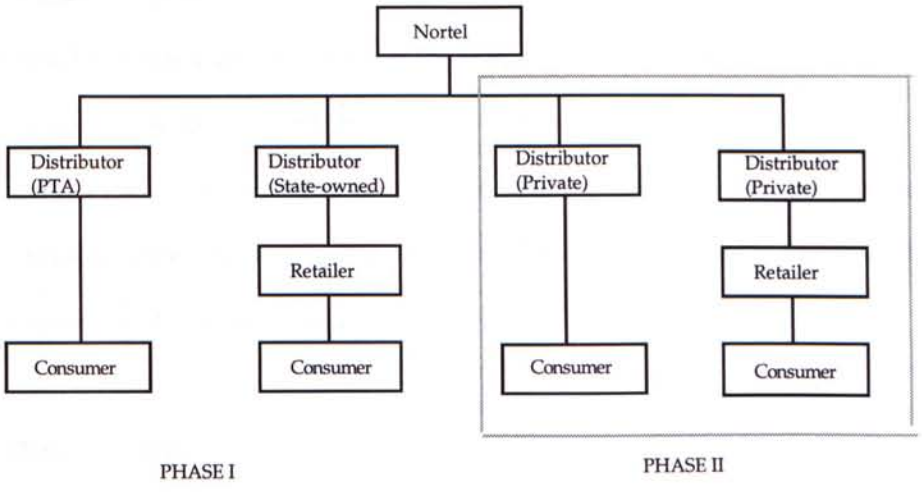
Nortel was originally active in the industrial market, selling of the industrial product is rather simple. The customer is the Post and Telecommunication Administration Bureau. So no distribution and retail network is required. Therefore Nortel must first understand the distribution and retail environment in China before setting any distribution strategies. Currently, Nortel does not have any strategy for the distributor or retailer network established in China (except the JVs). As discussed in the strategy sections, a good and efficient strategy is critical to the success of consumer product selling. Therefore the creation of a distribution channel is the first task.

(Refer to APPENDIX 11 for some general facts about distribution in China.)

Identification of Channel Members

Nortel is the manufacturer (originator) of the product, N911. The manufacturing plant is located in Germany, which is dedicated to the production of N911 to serve the global market. Product distributors are the PTAs in the three main markets (cities): Beijing, Shanghai, and Guangzhou.

Nortel China's distribution channel for the product is proposed as:



Phase I

Primary distribution

As analyzed in the strategy section: the first move is to cooperate with three major cities' PTAs - Beijing PTA, Shanghai PTA and Guangzhou PTA - and to sign distributorships with them. They are of key strategic importance, just like the role which Hong Kong network operators (e.g., HK CSL and Hutchison) play in distribution sales. Then, the next move is to investigate the possibilities to set up agreements with other state-owned distributors who have relationships with telecom bureaus or the MPT (such as GMCC of Guangdong). This can be done through the PTA or Nortel directly. As mentioned before, this will not jeopardize the relations with the PTAs, but will increase the number of channels. In fact, several companies are identified:

Beijing PTA - Beijing Mobile Telecommunication Company

Guangzhou PTA- Guangdong Mobile Communication Company (GMCC)

Shanghai PTA - Shanghai Telecommunication Equipment Company

Ministry of Posts & Telecommunications - China National Post and Telecom Appliances Corporation (PTAC) and China National Post and Telecom Industry Corporation (PTIC)

Secondary distribution

China Unicom is a second operator in China that also operates GSM networks in major cities. Nortel can recruit it as another distribution channel. The arrangement and agreement will be more or less similar to PTA, as Unicom is also an operator type of company. However, due to its nature, it is believed that Unicom will be more aggressive and will have more flexibility in arrangement. The representatives of each Unicom office are identified:

China Unicom (headquarters) - Ms. Li Huifen, General Manager

Beijing Unicom- Ms. Qian Bei Li, Director

Shanghai Unicom - Mr. Qiang Zhi Ming, General Manager

Phase II

After the primary distribution network is established, Nortel can then take a look to extend the distribution. One of the possible ways is to contact those privately owned wholesalers and retailers to distribute the N911 product. Introducing a self-employed distributor will create competition and increase efficiencies. But this should be done carefully so not to create political uneasiness and confrontation with the PTAs. Actually, some are already in the handset business and have their own retail networks. For example, Ericsson cooperates with major department stores in Beijing and Shanghai to set up retail counters in the stores. Some of the other potential distributors are:

Guangzhou Hang Tong Telecom Instruments Trading Co.

Tel: (8620) 8318 5555, 8318 5556

Shanghai GuoMai Telecommunication Co. Ltd.

Address: 1207, Jiangning Road, Shanghai, China

Tel: (8621) 6276 0000

HaiDa Telecom

Address: 40 Hsueh-Yuan Rd., Beijing, 100083 China

Tel: (8610) 6201 5247

China International Telecommunication Construction Corporation

Address: 22, Yu You Hutong, Xi Cheng qu, Beijing, China

Tel: (8610) 6601 2244

Another possible extension for distribution is to step into other major cities, like Tianjin, Chongqing, Wuhan, Nanjing, etc. When stepping into those cities, the distribution strategy will essentially follow the practice in Beijing, Guangzhou, and Shanghai. That is, start with the PTA and state-owned distributor first. Then the next step is to seek out possible private distributors.

Physical Distribution

The production is located in Europe now. Since the product volume and weight is small per unit, air shipment is the most efficient and quickest way. Before local manufacturing facilities is set up in China, the handsets need to be imported through main ports, which is Beijing international airport. Then some of the handsets can be distributed out to Shanghai and Guangzhou by inland flight. After that, "in city" transportation from Nortel sites to distributors will be by trucks.

The production should be localized in the JV. The ideal location will be in the Guangdong Nortel, due to three major reasons:

- its large factory has enough space for additional production line, similar type of equipment production line was set up already
- the JV is in Guangdong, which is one of the target areas and most dense mobile markets; this shortens the distribution time, since it also has good transportation means to other two cities
- already built large warehouse in Guangdong Nortel suitable for finished inventory and raw materials

After local manufacturing is set up, the transportation from Guangzhou to Beijing and from Guangzhou to Shanghai will be by flight. There are flights between Guangzhou - Beijing and Guangzhou - Shanghai each day. As the handset is small in volume and fragile in nature, air transportation will be the most reliable and efficient mean in this case. On the other hand, due to the poor condition of road system in China, long distance inland transportation by trucks should not be adopted.

Promotion

Promotion involves communicating with individuals, groups, or organizations to either directly or indirectly facilitate exchanges of products or services by influencing audience members to accept a business product offering. Depending on what effect is required, different promotional activities will be needed. The promotional effects are:

- category need: customer must recognize that a market exists
- brand awareness: make customer aware of the brand
- brand attitude: persuade customer to develop a favourable attitude
- brand purchase intention: the favourable brand must be stimulated to encourage consumers to experience the product and consider making a purchase
- purchase facilitation: make the product available at the right place and the right time for customers

Depending on which point in the distribution channel is being targeted, different promotional policies may be required. A push policy aims at the immediate channel member, whereas a pull policy aims promotional activities directly at the ultimate consumers. For the captioned case, there is a need to instigate both push and pull strategies, with different promotional work geared toward channel members and consumers.

Promotional task	Target group	
	Consumer	Distributor
Build brand awareness	√	
Build brand image	√	
Build product awareness	√	
Build product image	√	
Position against competitors		√
Create primary demand for product	√	√
Promote after-sales support	√	√
Promote dealers/distributors		√
Support dealers' promotions		√
Promote customer credit		√
Influence distributor buying process		√

Promotional task	Activities
Build brand awareness	• TV commercial (corporate)
	• Sponsorship
	• Publicity
Build brand image	• TV commercial (corporate)
	• Sponsorship
	• Publicity
Build product awareness	• TV commercial (product)
	• Newspaper advertisements
	• Magazine advertisements
	• Outdoor advertising
	• Leaflets, handbills, pamphlets, brochures
Build product image	• TV commercial (product)
	• Magazine articles
	• Leaflets, handbills, pamphlets, brochures
Position against competitors	• Sales training
	• Distributor training
Create primary demand for product	• Personal selling (to distributor)
	• Trade promotions, customer promotions (replacement)
Promote after-sales support	• Point-of-sales promotions
	• Product demonstrations
	• Personal selling
	• Distribution
	• Provide technical information to distributor
Promote dealers/distributors	• Sponsorship
	• Personal selling
	• Luncheon sessions/seminars
	• Trade shows, exhibitions
Support dealers' promotions	• Joint point-of-sales promotions
	• Provide promotional materials and staff support
Promote customer credit	• Sales promotions
Influence distributor buying process	• Personal selling
	• Luncheon sessions/seminars
	• Trade shows, exhibitions

Summary of Nortel's Current Promotional Activities

Since the company's switching equipment is large, expensive, and technically complex, the most appropriate way to promote and sell the product is to use a professional sales force. Personal selling is the primary component of Nortel's promotional mix. Currently, Nortel's sales team is organized geographically. It will respond to inquiries and receive the orders from customers (PTA). It will also pay regular visits and presentations to the customers.

In the early days, our marketer did very little advertising. Since the product is an industrial installation, major customers are those provincial Post and Telecom Administration Bureaus. Advertising in the mass media which appeals to the general public is therefore not an effective way to promote this product. What Nortel is doing currently is just some institutional advertising. It promotes its goodwill and corporate image in China.

Nortel participates in many telecom trade shows and exhibitions held in various locations within China. Those events are attended by professional people who usually are decision makers in the industry. Immediate sales are rare during the trade shows. The objective in participating in trade shows is to demonstrate technical expertise and promote its corporate image to potential buyers. One more frequently used sales promotion technique is a sponsorship program.

(Refer to APPENDIX 12 for facts about advertising in China.)

Advertising

TV commercial #1 (corporate)

This program is used to promote the corporate image. The commercial selected is a 30-60 second video that focuses on Nortel's leading technology edge and changes in the telecommunication industry. The commercial is chosen from the global advertising materials library. It is original produced for the European market.

The commercial will be shown on the major television channels in Beijing, Shanghai, and Guangzhou. This commercial should be shown after the product launch, and run for a period of one month. After that, evaluations will be carried out to get feedback from the public.

The use of global materials may not achieve the best results; however, this will save a lot on commercial production cost. The exact schedule is not yet defined.

The Marketing Communications Department should be responsible for this activity. However, due to the complex nature of the task and the expertise required, the detailed work will be subcontracted to Nortel's corporate advertising agent, J. Walter Thompson. Its contact points are:

J. Walter Thompson

Hong Kong office,

(852) 2584 4668

Joint-venture partner -

Wanke Development

Beijing - Tel: (86 10) 595 4160 , Fax: (86 10) 595 4158

Guangzhou - Tel: (86 20) 777 0323 , Fax: (86 20) 778 7148

Shanghai - Tel: (86 21) 247 8280 , Fax: (86 21) 247 2122

TV commercial #2 (product)

This program will be used to get the attention and awareness from the public on the N911 product. The commercial selected is a 30-60 second video borrowed from the UK market. The commercial uses a faithful hound as the advertisement's subject, promoting the "phone you feel at home with" (refer to APPENDIX 13 for photo).

Again the commercial will be shown on the major channels in Beijing, Shanghai, and Guangzhou alternatively. Feedback from the general public will be collected and evaluated after one month period.

This commercial is originally produced for some other markets. The promotional effect may not be as good as in other market, but the production cost is saved.

The launch schedule and task arrangement is similar to that of TV commercial #1.

Newspaper advertisements

This program aims to seek the attention and awareness from the public on the N911 product. An advertisement will be placed in the following major morning newspapers: Guangzhou Ribao, Jiefang Ribao, and Beijing Ribao. The graphic should show a picture of the N911 phone with some simple descriptions. The advertisement will be run for a period of two weeks.

The Marketing Communications Department should assume the primeship of this activities. The Marketing Communications Department should be responsible for this activity.

Magazine advertisements and "advertorials"

This program will promote the product image and features in depth. The advertisement will be placed in the following magazines:

Magazine	Circulation	Readership	Sponsor	Advertorial
Chinese Telecommunications Construction	Bi-monthly	Executives	MPT, MEI, and Universities	Possible
Telecom Trade	Monthly	Executives and businessmen	MPT and industry	Yes
Electronics Today	Monthly	Professionals	MEI and IDG of US	No, but product news
China Wireless Communications	Monthly	Wireless professionals	State Radio Regulatory Commission	Possible
Telecommunication Science	Monthly	General	China Institute of Communications	No, but product news

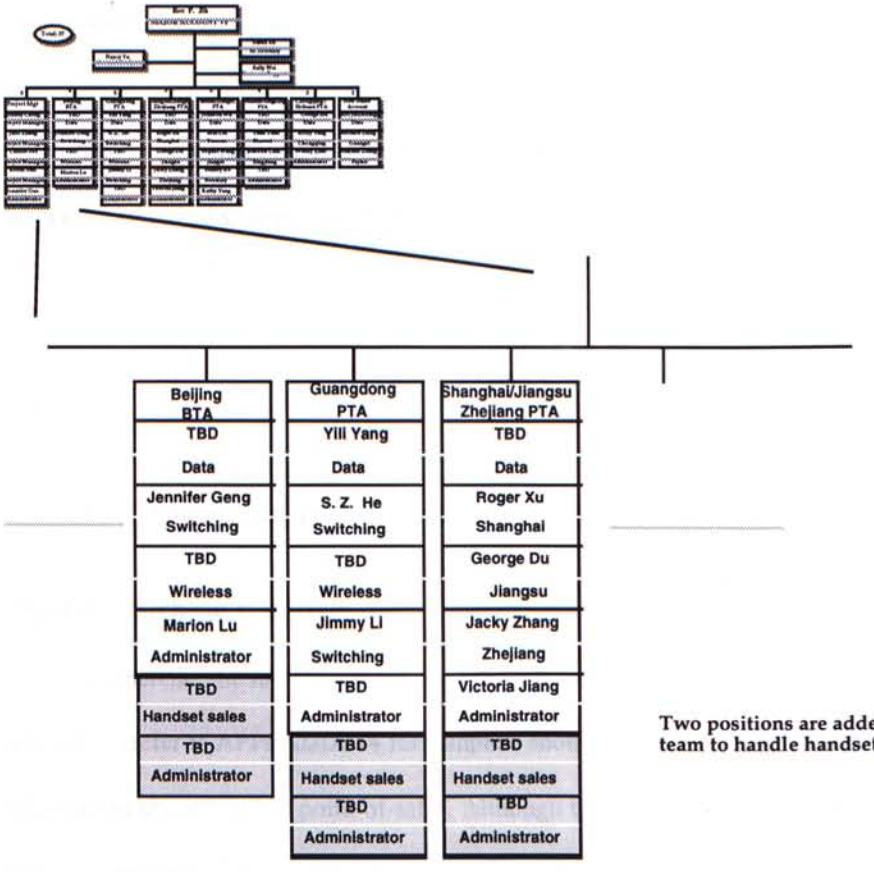
Besides, "advertorials" (commissioned newspaper or magazine articles extolling the virtues of a marketer's product) will be adopted whenever possible. The Marketing Communications Department is primarily responsible for this activity.

Outdoor advertising

Outdoor advertising includes billboards, buses, telephone booths, utility poles, taxis, and roof-top sites for neon lights, and is also chosen as one of the advertising channels. However, due to the sophisticated and disorganized charging policy, the exact location and contents are not defined yet. The Marketing Communications Department must work in cooperation with the advertising agency on this task.

Personal Selling

Nortel has three major sales offices in Beijing, Shanghai, and Guangzhou. "Personal selling" is carried out by Nortel's internal sales force. The present structure assumes the form of a "Major Account Management Team," and there are account primes to look after each PTA account, respectively:



In addition to the basic responsibilities of focusing on customer's complete business portfolio through Account Planning to achieve orders, sales, and EBT objectives, other specific tasks of the distribution sales manager include:

- liaise with distributors
- negotiate contracts and agreements with distributors
- encourage the distributors to focus on relationships, to influence experts and decision makers, and to provide a single point of contact
- distributor training

- promote distributor relationship
- support distributor promotiona
- explore new distributors and retailers
- participate in trade shows and exhibitions
- hold luncheon sessions/seminars
- organize key resources around customers, to ensure streamlined and complete interactions with Nortel

The sales department is primarily responsible for the tasks listed above (along with the support from marketing and various operational departments).

Sales Promotions

The following sales promotion activities can be used to promote N911:

Point-of-purchase materials

To increase the merchandising impact, leaflets, posters, customer handbills, brochures, and pamphlets (refer to APPENDIX 14 for samples) should be used to attract attention and provide information about N911 at point-of-sales. Although the initial contacts are only at the PTAs' offices, the above materials are important to convey last minute messages to consumers before they purchase. Moreover, as the distribution and retail network develops, point-of-purchase will be extended to those PTA related shops, retailers, or even department stores. Then the promotional leaflets can enhance N911 product awareness and image to those window shoppers.

Trade shows and exhibitions

Participation in major trade shows and exhibitions is already included in Nortel's promotional mix. "Telecom China" and "PT/Expo Communication China" are the two major exhibitions in which Nortel has taken an active role. Additional work to be done is to include the N911 into the portfolio to be displayed in these existing exhibitions. Nortel should also participate in some other consumer

electronics trade shows such as "China Elecomm" held in Shanghai, "Commtel China" head in Guangzhou, and "The China Int'l Electronics & Telecommunications Exhibition" held in Beijing.

For some small and regional exhibitions, Nortel does not need to take a solo role. It can encourage and support the distributors to participate. The assistance may be in the form of manpower resources, promotional materials, and subsidies, which should be considered case by case.

Consumer promotions (replacement promotions)

This promotional program focuses on the PTA distributors. Consumers are encouraged to trade-in their analog TACS handsets for new N911 handsets. A discount of RMB500 will be given. This not only promotes Nortel's handsets, but also stimulates the upgrade to the digital GSM network, which results in revenue for the operators (PTAs). So it is a win-win strategy for both Nortel and the PTAs (i.e., the distributors). The exact arrangements and details should be worked out with the corresponding PTAs of the target cities.

Trade promotions (trade rebates)

Distributors will be granted some discount if they can achieve a certain sales volume. The suggested volume is about 10,000 per distributor account. The following discount structure is suggested:

Sales volume	Discount
<10,000	0%
10,000 - 30,000	5%
>30,000	10%

(The impact on pricing is presented in the pricing section.)

Sales forces promotion

Sales staff each has his own compensation package (which consists of salary and commission). A additional bonus will be given to sales managers who can meet a sales volume target of 5,000 units. After 5,000 level, the bonus awarded will be calculated in a pro rata basis. The exact amount of bonus will be recommended by the compensation manager of Human Resources department and subject to

management approval. Such measure will encourage the sales personnel to act aggressively in aligning distributors and pushing out the products.

Product demonstrations

Product demonstrations are particularly important in China. When people have the chance to see a product, touch it, and understand how it works, they are more likely to buy it. Product demonstrations will be held jointly with distributors in large department stores and airports.

Sponsorship

Sponsorship helps build a company's reputation in a community. Nortel has sponsored the following major programs in the past few years:

- In 1993, Nortel was the sole sponsor of the world premiere production of "The Joy Luck Club," a dramatic production of Amy Tan's best-selling novel. The play was coproducted by the Shanghai People's Art Theater and the Long Wharf Theater of the United States.
- In April 1996, Nortel China donated 1 million RMB to the Hebei provincial branch of the national educational development charity, China Hope Project. This is a non-profit charity whose mission is to raise much-needed funds to enable children in China's rural areas to receive education.
- In 1995, Nortel established a sponsorship program for the China National Symphony Orchestra (formerly known as the Central Philharmonic Orchestra of China) for the long-term development of the orchestra. The program will provide US$250,000 through 1996 and includes the provision of new musical instruments valued at more than US$75,000.

The above sponsorships should be maintained and continued as a means to promote corporate image and goodwill. Possible extensions include sponsorship of some major sport events, like soccer matches and basketball games since viewership is broad and high.

Publicity

Publicity is basically a costless promotional element. Therefore, publicity is another area on which Nortel can focus. It can generate publicity by creating special events, press releases of distributorship signings and interviews. Publicity is used here to promote the company's image. Furthermore, by giving more technical advice to government research institutes and publishing more technical papers in professional journals, it can also enhance its corporate image and increase its promotional effectiveness.

Budget

Since Nortel needs to build up brand image, promotional work will be an inevitable component in the overall marketing program. As there are a lot of promotional activities to be done, the cost will not be small. A preliminary estimate of promotional cost is required. Such cost is considered as a part of the "cost of sale" when determining pricing level.

Promotional mix	Details	Amount budgeted
Advertising	- TV commercial #1 (corporate)	US$80K
	- TV commercial #2 (product)	US$80K
	- News advertisements	US$100K
	- Magazine advertisements and "advertorials"	US$50K
	- Outdoor advertising	US$100K
Personal selling		Part of overhead
Sales promotions	- Point-of-purchase materials	US$30K
	- Trade shows and exhibitions	US$60K
	- Consumer promotions (replacement promotions)	Refer to pricing section
	- Trade promotions (trade rebates)	Refer to pricing section
	- Product demonstrations	US$80K
	- Sponsorship	US$80K
Publicity		No direct cost
	Total cost:	US$660K

The total promotional cost presented above is just an estimation that based on subject experts' experiences. The exact can only be finalized after the launch schedule is fixed and media slots are booked.

Pricing

Mobile Handset Prices and Service Charges in China

Since the initial start-up of business is to utilize PTAs as distributors, their pricing levels are important for Nortel in setting its wholesale price. Nortel, of course, wants to set a wholesale price as high as possible. But if the wholesale price is too high, then there may not be enough profit margin leave to the distributors.

Currently, the handset retail sales of PTAs is essentially monopolistic. As a result, their retail prices are set at a comparatively high level (as compare to North American and Hong Kong). The price range is from RMB4,400 to RMB8,300 nowadays. This serves as an important indicator of the market price of GSM handsets in China.

(Refer to APPENDIX 15 for GSM mobile handset prices and service charges in China.)

Estimated Costs of Other Vendors' Handsets

The handset costs are highly confidential data for each vendor. But based on internal marketing intelligence, the wholesaler price (i.e., from vendor to distributor) of competitors' handsets are estimated as follows:

Model	Price range
Motorola 7500	US$346-380
Motorola 8200C	US$380-450
Motorola 8700C	US$460-510
Motorola StarTAC	US$1200 (?)
Nokia 2110	US$285-320
Nokia 8110	US$570-610
Ericsson GH337/GF337	US$380-448
Ericsson GH388/GF388	US$460-510

NEC G28	US$340-360
Panasonic G500	US$350-380
Mitsubishi MT-20	US$285-320
Alcatel HC800	US$320-350
Siemens S3	US$360-410
Siemens S4	US$460-510

Pricing Considerations

- There is essentially no legal constraint on the pricing of handsets in China. Determination of price is up to market forces. From administrative and negotiation point of view, Nortel should charge the same wholesale price and recommend the same retail price to all PTAs in first phase. But, of course, the PTAs may sell the handsets at whatever price they want. As a result, retail price may be different in different cities.
- Pricing objectives usually are: profitability, volume, market share, prestige, and meeting competition. Since Nortel's primary objective is to enter the market, so the pricing objectives should be a combination of market share and meeting competition. Besides, as the N911 handset is not a high end product, it is difficult to establish a prestige image. So prestige pricing objective should not be adopted.
- Since the pricing objectives are market share and meeting competition, the possible pricing strategies will be penetration pricing and competitive pricing. Although profit is not a main concern, loss is also not desirable whatever possible. Therefore, competitive pricing is more suitable than penetration pricing with very low price. Nortel can then focus on other non-pricing elements - product, promotion, and distribution - to differentiate.
- One way of pricing is to consider the market price and competition. From the data collected, it can be seen that the retail price range of high end products is about RMB5,500 - 7000. The retail price range of mid-range products is about RMB 4,000 - 5,500. The suggested retail price of N911 should fall in the mid-range category.
- Another way in setting price is to start from the "cost plus" formula. Cost is an important component when doing business. Breakeven is a baseline in developing most business plans. The cost details of N911 and its optional kits are asfollows:

Code	Description	Cost
53 1911 709 00	Standard Basic Kit - 1	US$XXX
53 1911 729 00	Standard Basic Kit - 2	US$XXX

(Cost figures are deleted from this version due to confidential nature. Please contact Professor Julie Yu of The Chinese University of Hong Kong if exact details are required.)

- However, when a company needs to achieve certain strategic objectives, it can forego the profit or even sell at a loss in the short term. In this marketing plan, strategic objectives are considered to be more important than the profit objectives, as handset sales are a long-term business. Therefore, the first step is to get market share; profit can be gained later.
- Profit margin shared among channel intermediates also needs to be considered as well. This is of particular importance if the channel intermediates have high negotiating power.

Revenue Analysis

With regard to the above considerations, it is suggested that the N911 (standard basic kit-2) wholesale price be set at US$356 (excluding 17% VAT, which is paid by the distributor), and the suggested retail price is US$540. To show the overall financial picture, an income analysis is prepared as follows:

Year		1997	1998
Total sales volume		15000	25000
Price per unit		US$356	US$356
Total revenue (in US$K)		**5340**	**8900**
Less: trade promotion discount		0	0
Less: replacement promotion	(US$64 X 1K)	64	64
Revenue recognized		**5276**	**8836**
Cost of sales			
Total material cost			
Freight cost (% of material)			
Other cost of sales		(Cost figures are deleted from this version due to confidential nature. Please contact Professor Julie Yu of The Chinese University of Hong Kong if exact details are required.)	
Promotional cost			
Technical support			
Contingency			
Total cost of sales			
Standard Margin $			
%			
Other product cost			
Warranty (% of material)			
Inventory (% of material)			
Gross Profit $			
%			
Fixed overhead (% of sales)	10.00%	527.6	883.6
EBT		**-75.36**	**86.8**
ROS %		**-1.43%**	**0.98%**

Assumptions:
1. Market potential in Guangzhou, Beijing, and Shanghai are: 72,500 sets, 55,000 sets, and 60,000 sets, respectively, in 1997. And Nortel is able to capture 8% share in these markets.
2. No trade discount is granted, as the volume of each distributor is less than 10,000.
3. The sales of N911 will extend to five more cities, thus boosting the total volume to 25,000 units in 1998. The total promotional expense is increased to US$1,000K.
4. Only handset sales are considered and accessories sales are neglected.

From the above analysis, we can see that the price of US$356 induces a minor loss to the company in the bottom line for 1997. However, if the product succeeds and sales volume grows, there will be a profit in 1998. Besides, since the handset sales is an incremental and strategic one, the focus should not only be on profitability and the bottom line. Instead, the emphasis should be placed on opening a new type of business

for long-term growth. And the strategy is to quickly enter the market and gain acceptance and brand awareness. Therefore, the wholesale price of US$356 is reasonable from both market and cost perspectives.

CHAPTER X

LIMITATIONS

Market segmentation is only based on geographic and demographic bases. Segmentation using state-of-mind variables,product, usage or benefits are also possible. In order to do that, however, more specific market surveys (probably of the descriptive type) should be carried out to address these questions.

For wireless handset sales, Nortel China Wireless is starting from point zero. Therefore, it is hard to define a specific benchmark and yardstick to measure the performance. It is because any result, no matter how small, can be seen as a breakthrough. On the other hand, setting a high target is also harmful, as this may kill the business in its early stages without enough incubation. So specific performance measurement is not suggested here. Only a strategic goal to enter the business is defined qualitatively. After the business is started, it will be easier to set up some reasonable targets and objectives.

There is no publicly available database which can reveal the handset consumer's profile. Specific demographic data can not be obtained (e.g., age, income level, gender, occupation, etc.). Those information are important to develop effective marketing programs. To gather such data, Nortel China Wireless should hire an external marketing researcher to carry out some large scale surveys in China. Thus, funding commitment is required from Nortel management.

No detailed descriptive research has been done. The major reason is that Nortel China Wireless starts from nothing in the handset market. As it has no previous experience in that field, no specific hypotheses or questions can be defined. Besides, as a beginning point, a strategic plan which is exploratory in nature is more useful and practical than a more specific, narrowed down, proposal.

China statistics usually have a long time lag. Besides, the reliability and quality of the data are often questionable. In order to minimize the inconsistencies, data from various sources have been collected and counter-balance in order to get the most accurate picture. However, further market research is required after the initial start-up of the business.

There are also some other validity issues that need to be aware. For example, it is not easy to validate market potential in most of the marketing cases. In this marketing plan, market potential is difficult to measure from the end customer perspective. Fortunately, the handset business is a complement to the communication services provided by the operators. Therefore, the anticipated growth of network capacity can serve as a indirect measure of market potential. Another item is the market share data. The current measure is done by the sales volume announced by each suppliers and then divided by the total market size. There are usually distortions as some handsets are sold by suppliers but not in use by consumers (e.g., in stock, in transportation, etc.). Therefore, a more valid measure should be done by gathering data from the operators. When a user first register for cellular services, he has to provide information about the handset he is using (or intend to use). These are valuable information to marketers. In China, such information can be obtained from operators informally. Success will depend on the relationship (Guanxi) between the suppliers and operators.

CHAPTER XI

CONCLUSION

A strategic marketing plan is developed for Nortel China Wireless group's entry into the wireless handset business. In the plan, both the macro- and microenvironments are first identified. Then appropriate competitive strategies are formulated. In addition, the initial marketing strategies for the four different aspects of the marketing mix are also proposed in this report.

However, it is not the end of the task; instead, it serves merely as a start. Once a "go ahead" decision is made and resources are committed, Nortel China Wireless group can then implement the proposed marketing program. After the real start, Nortel China Wireless group will have a better feel about the business, and more real data can be gathered. As a result, it may be possible to solve some of the issues as identified in the "LIMITATIONS" chapter. On the other hand, as hypotheses are generated and more specific questions are asked, it may be necessary to do more market research (particularly descriptive and experimentation) to solve the "mysteries". Nortel China Wireless will actually gain intelligence and experience in this process. Using the newly gained knowledge, Nortel China Wireless can then reassess the environments and redefine its strategies if necessary. As a result, more effective and efficient marketing programs can be generated and implemented. This will ultimately increase the chance and power of Nortel China Wireless to succeed in this industry.

Therefore the marketing planning cycle of "situation analysis -> strategy formulation -> market program development -> implementation -> situation analysis ->....." is repeated again and again. Mastery of the cycle will enable Nortel China to be continuously competitive and successful.

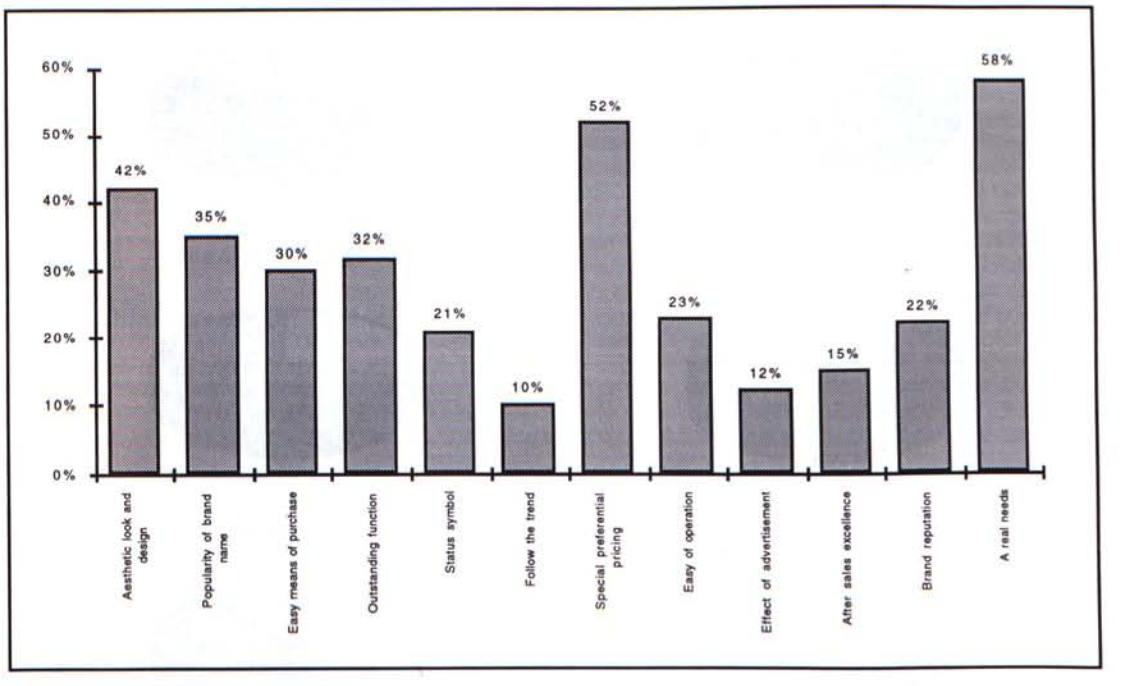
ABBREVIATIONS AND ACRONYMS

AMPS	Advanced Mobile Phone Service
BTA	Beijing Post and Telecommunication Administration Bureau
CDMA	Code Division Multiple Access
CESEC	China Electronic Equipment System Engineering Company
CT-2	Cordless Telephone 2
DCS	Digital Cellular System
DECT	Digital Eurpopean Cordless Telephone
DGT	Directorate General of Telecommunication
EIU	The Econmist Intelligence Unit
ETACS	Enhanced Total Access Communications Service
GPTA	Guangdong Post and Telecommunication Administration Bureau
GSM	Groupe Spécial Mobile
LOB	Line of Business
MPT	Ministry of Post and Telecommunication
NMT	Nordic Mobile Telephone
PHS	Personal Handyphone System
PLA	People's Liberation Army
PTA	Post and Telecommunication Administration Bureau
TACS	Total Access Communications Service
TDMA	Time Division Multiple Access

APPENDIX 1

MARKET SURVEY RESULTS PLOTTING

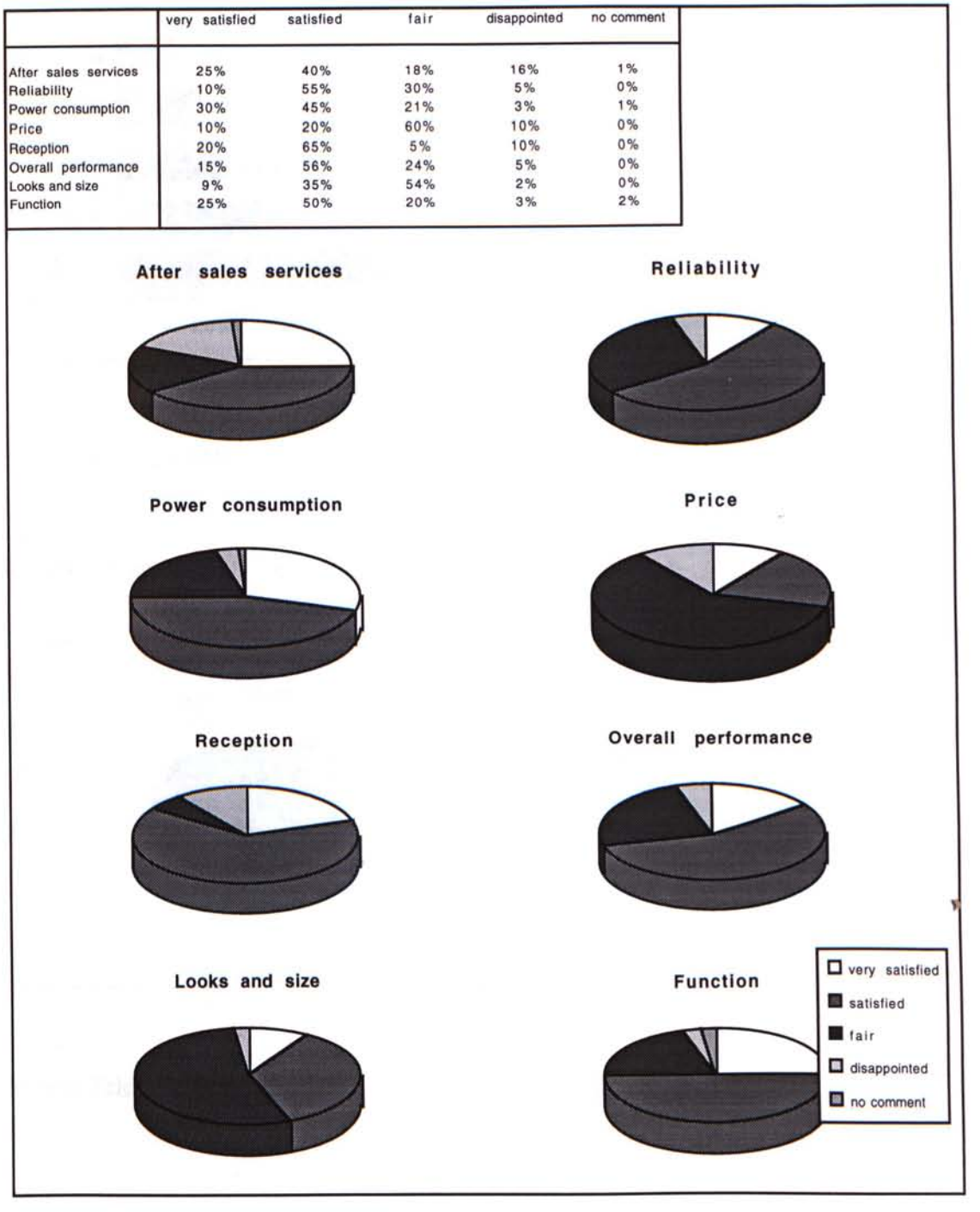
1. Reasons for purchasing a mobile phone



Source: Telecomn, May 1996.

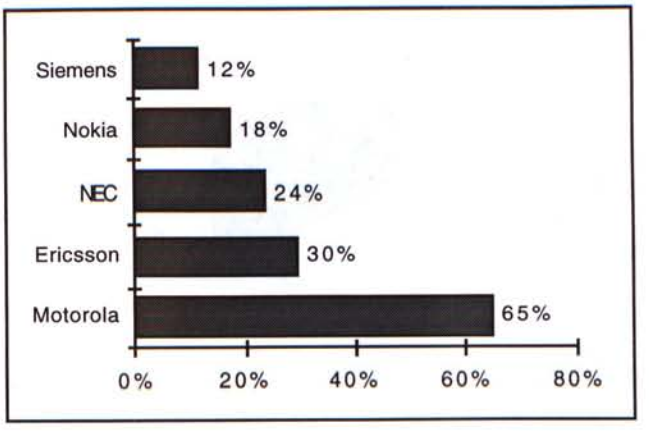
2. For the current mobile phone, what is the satisfaction level in different areas?

	very satisfied	satisfied	fair	disappointed	no comment
After sales services	25%	40%	18%	16%	1%
Reliability	10%	55%	30%	5%	0%
Power consumption	30%	45%	21%	3%	1%
Price	10%	20%	60%	10%	0%
Reception	20%	65%	5%	10%	0%
Overall performance	15%	56%	24%	5%	0%
Looks and size	9%	35%	54%	2%	0%
Function	25%	50%	20%	3%	2%



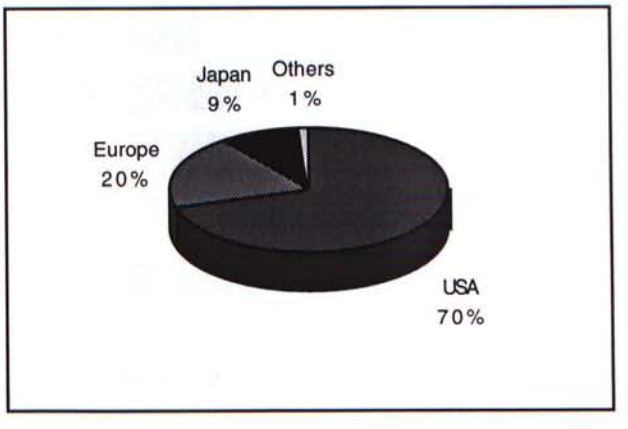
Source: Telecomn, May 1996.

3. Which are the five most popular mobile brands?



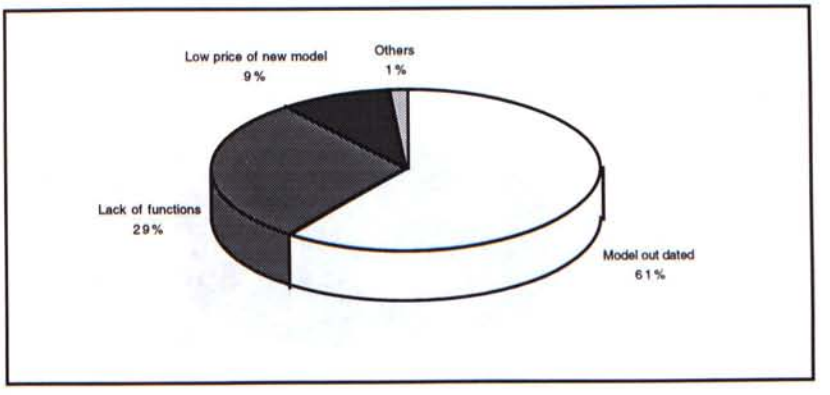
Source: Telecomn, May 1996.

4. Which country's mobile phones have the best image of quality?



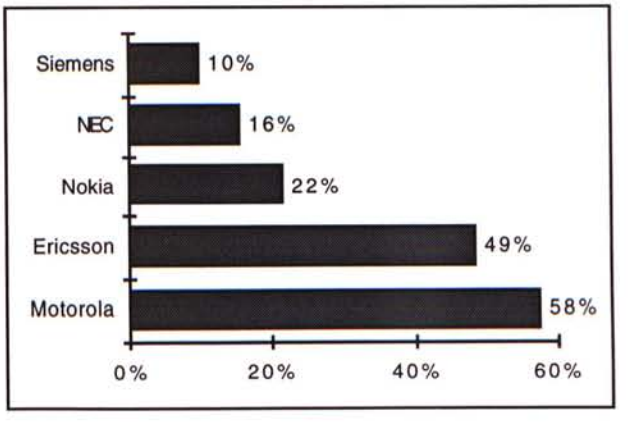
Source: Telecomn, May 1996.

5. Reasons for changing mobile phone?



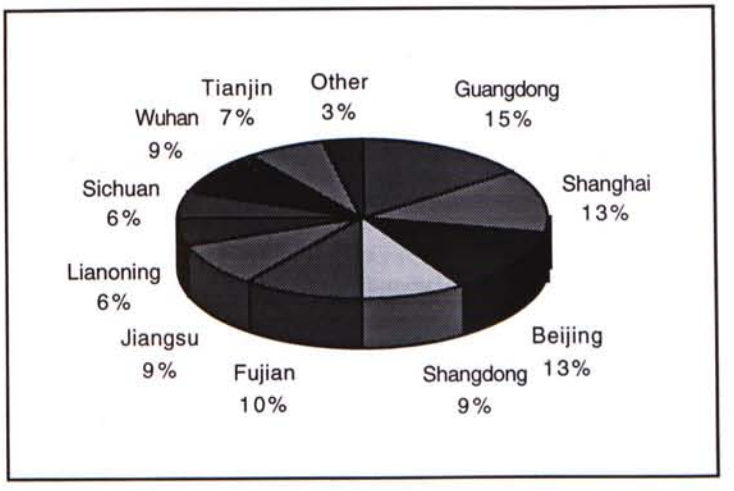
Source: Telecomn, May 1996.

6. The brand of the next mobile phone to be purchased (can choose more than one)



Source: Telecomn, May 1996.

7. Composition of respondents



Source: Telecomn, May 1996.

APPENDIX 2

WIRELESS COMMUNICATION STANDARDS AND DETAILS

Standard	Frequency (MHz)	Available Bandwidth (MHz)	Carrier Spacing (KHz)	Available Voice Channels
NMT 450	450	4.5	25/20	180/220
AMPS	800	20/25	30	666/832
TACS900	900	25	25	1000
E-TACS	870-890	33	31	1240-1320
GSM	900	25	200	1000
PDC	800/1500	25	25	3000/4800
TDMA	800	25	30	2496
CDMA	800	25	1790/1250	48-176
DCS 1800	1800	50	200	1000
PHS	1900	12	300	160
DECT	1900	20	1728	138

Analog Cellular

Advanced Mobile Phone System (AMPS) - AMPS has been deployed in every country in the Asia Pacific region. AMPS was developed in the U.S. by Motorola and AT&T and first employed in 1983. The radio channel capacity has been sufficient to accommodate growth and high-density traffic in all but the largest cities. AMPS systems were designed with portables in mind.

Total Access Communications System (TACS) - TACS has not faired as well as AMPS in Asia Pacific. The exception, of course, is China, where TACS is the dominant analog standard. By the end of 1995, there were almost 3 million subscribers using TACS in China. TACS is a derivative of AMPS technology modified for the 900 MHz range and was first introduced in the U.K. in 1984.

Nordic Mobile Telephone System (NMT 450/NMT 450i/NMT 900) - NMT has met with limited success in Asia, often losing ground as new operators came on line with other technologies. A consortium of four Scandinavian countries (Finland, Denmark, Sweden, and Norway) developed the NMT system, which has been in use since 1981.

Digital Cellular

Capacity expansion, regulated migration, and the start up of new networks or operators are three important trends influencing the growth of digital networks. The main attraction of digital technology is capacity. Digital systems, in theory, have much greater capacity limits than analog equivalents, though whether this is actually true is a subject of intense debate.

GSM - GSM is the dominant digital standard in Asia Pacific. GSM networks are operating in every country except Bangladesh and Korea. The Conference of European Posts and Telegraphs (CEPT) formed a study group in 1982 to develop a single cellular standard that could be used throughout Europe. The group was called the Groupe Spécial Mobile which became GSM. The European Telecommunication Standards Institute (ETSI) assumed responsibility for the continued development of GSM in 1989 and published the Phase I recommendations in 1990. Lasting over 10 years, the development of GSM technology and equipment standards involved dozens of equipment vendors, operating companies, software houses, and standards organizations. The GSM standard was first implemented in July 1992 by operators in Germany, Finland, Denmark, and France. As of mid-1995, there were are approximately 110 members of the GSM MOU from some 55 countries.

TDMA (IS-54/IS54-B/IS-136) - TDMA has not fared as well as expected in Asia Pacific. Only a handful of countries have chosen to upgrade existing AMPS networks to take advantage of the digital TDMA. In January 1992, the Telecommunications Industry Association (TIA) endorsed IS-54 or TDMA as the American digital cellular standard. By February 1994, commercial TDMA service had been launched in larger U.S. and Canadian markets, including Chicago, Los Angeles, Miami, New York, San Francisco, Montreal, Quebec, and Toronto.

CDMA (IS-95) - CDMA works by modulating each subscriber's data stream with a high speed random chip sequence, creating a wideband signal that looked like noise - literally spreading the users' signal. In August 1993, code division multiple access (CDMA), or IS-95, received endorsement from

the TIA for cellular, and the standard has since been approved for deployment in the 1900 MHz U.S. PCS band. CDMA stands a good chance of doing well in the Asia Pacific region. Korea has chosen CDMA as its digital standard. There is also a push to allow the introduction of CDMA into China.

Personal Communication System (PCS)

In the United States cellular and PCS systems are increasingly being referred to as "high-tier Personal Communications Services." Many of the differences between PCS and traditional cellular systems arise from the fact that PCS systems operate in the 1800 to 1900 MHz bandwidth, while traditional cellulars function in the 800 to 900 MHz range.

Digital Cellular System 1800 (DCS1800) - DCS 1800 is the leading PCS standard in Asia Pacific with networks operating in Thailand, Singapore, and three in Malaysia. In January 1991, the European Telecommunications Standards Institute (ETSI) approved DCS1800 as Europe's high-capacity digital cellular standard, and as the basis for Europe's PCS. DCS1800 is a reworking of GSM technology in the 1800 MHz band.

TDMA (IS-136) - See discussion above on the TDMA standard (IS-136), as it relates to both cellular and PCS networks.

CDMA (IS-95) - See discussion above for more detail on the CDMA standard (IS-95), as it relates to both cellular and PCS networks.

Cordless

Cordless devices provide low mobility, low power, two-way wireless communications. Some of the leading technologies include the Digital European Cordless Telephone (DECT) standard, and the second generation cordless telephone (CT-2).

CT-2 - Second generation cordless technology, CT-2, was a significant development in cordless technology allowing cordless phones to move outside the home. Users could place, and sometimes receive, calls within the range of a base station. However, the digital CT-2 technology does not provide for hands-off operation, that is, calls cannot be transferred from one base station to another as with cellular systems.

Digital European Cordless Telephone (DECT) - DECT standard specifications were established in 1988 by ETSI. DECT is a TDMA-based digital cordless telephone standard developed to replace older analog cordless phone technologies. DECT is based upon the same frequency modulation technique as CT-3, but occupies different frequencies. DECT and CT-3 use time division multiple access with time division duplexing (TDMA/TDD). DECT places 12 simultaneous calls (two-way voice channels) on a single broadband radio channel (roughly 20 MHz).

Personal Handyphone System (PHS) - This technology is a low power digital cordless technology,TDMA /TDD (time division duplex), which operates at 1.8/1.9 GHz bands with a range of 100 meters from the base station. PHS is used for public local mobility, wireless local loop, wireless PBX, and domestic cordless phone applications. It is the Japanese version of the European DECT technology. In crowded areas such as big Japanese and Asian cities, this technology offers a cheap solution for local, public mobility and is, therefore, very successful in Japan. It can successfully compete in these very dense areas with cellular solutions. In 1996, there were 5 million subscribers in Japan.

APPENDIX 3

WIRELESS PHONE TYPES

There are three basic types of cellular phones: handportables, mobiles and transportables

Handportables

These are the smallest and lightest cellular phones available. Weights have now decreased to as little as 200g, and most will fit easily into a jacket pocket. Handportables rely on batteries and can therefore be used in any location. However, this portability is gained at the expense of power. Because they rely on batteries, handportables are less powerful than mobiles, which run off car batteries. As a result, they will suffer from a higher rate of call failure in areas of poor signal strength. To remain compact, aerial length has also been reduced, and this may contribute to poorer call quality. Many handportables come with an optional car kit, which allows the handset to run off the car battery. This gives additional power and improved reception from the car aerial. Some kits also boost the power of the handset. The normal talk time ranges from 45 minutes to 120 minutes, which means that the batteries must be recharged frequently.

Mobiles

These are permanently installed in a car and run off the car battery. This means they don't need recharging and are considerably more powerful than other types of cellular phones. Mobile phones also benefit from bigger aerials, which can be situated on the roof of the car. The main disadvantage of a mobile is that, once installed in your car, it can't be removed and used elsewhere. Installation should be carried out by a reputable and recommended dealer. However, as most of the handportables have car kits, mobiles have become less common.

Transportables

Transportables can be carried from place to place, but can't be described as fully portable (weighing around 2 kg). They are ideal for those who need a degree of portability but whose primary requirement is power. Transportables have powerful battery packs which allow a higher class of output than smaller handportable phones. Most transportables can be installed in a car with an optional kit. Due to the bulky size, it is usually used for special purposes.

APPENDIX 4

WIRELESS SERVICES GROWTH IN CHINA

The aggregate revenues from China's mobile services market grew from $408 million in 1991 to $9.3 billion in 1995, of which roughly 32% was derived from cellular service and nearly 68% from the liberalized paging market. In upcoming years, mobile services revenues are expected to take off, reaching over $20 billion by 1999, an average per annum growth of 22%.

Cellular Service Growth

China's two public cellular operators are hardly able to keep pace with the surging demand for service. Cellular subscribership has more than doubled each year since service started in 1990, increasing an average of 170% per year. Guangdong province, which accounted for 32% of cellular subscribers in 1994, led the way in the first half of 1995, adding over 191,000 subscribers to its network.

Mobile Services Market, 1991-1999

Mobile Services	1991	1992	1993	1994	1995	1996	1997	1998	1999
PCS Subscriber (thousands)	-	-	-	-	-	-	126.64	384.21	906.6
Cellular Subscriber (thousands)	67.56	180.9	643.3	1581.6	3737.65	5818.12	8611.58	11206.05	14246.5
- Analog	67.56	180.9	643.3	1541.6	3040.49	5134.37	6838.61	7940.29	8288.87
- Digital	-	-	-	40	697.16	1197.18	1772.97	3265.76	5957.63
Total	67.56	180.9	643.3	1581.6	3737.65	5818.12	8738.22	11590.26	15153.1
Penetration									
Cellular (subscribers per 100)	0.01	0.02	0.05	0.13	0.31	0.47	0.68	0.88	1.1
PCS (subscribers per 100)	-	-	-	-	-	-	0.01	0.03	0.07
Total	0.01	0.02	0.05	0.13	0.31	0.47	0.69	0.91	1.17
Service Revenues (US$M)									
Cellular	65.7	167.53	567.39	1328.54	2990.12	4421.77	6217.56	7686.23	9283.09
PCS	-	-	-	-	-	-	80.01	230.59	516.9
Total	65.7	167.53	567.39	1328.54	2990.12	4421.77	6297.57	7916.82	9799.99

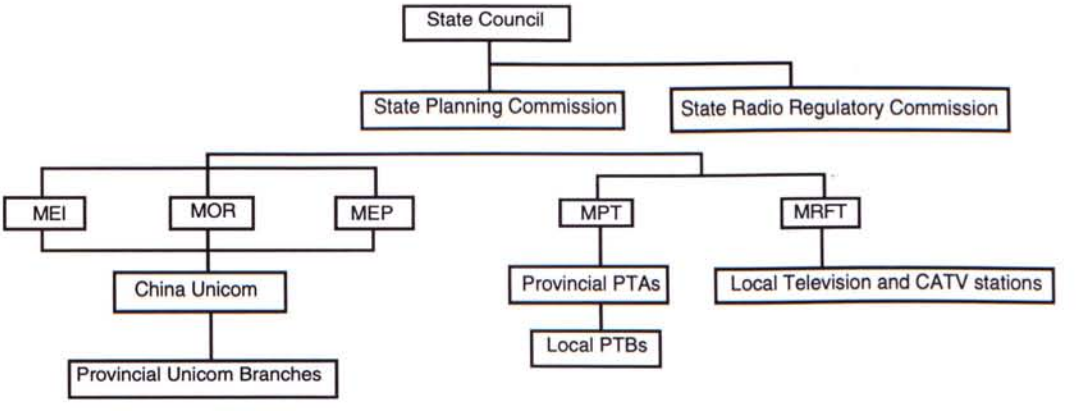
Source: MPT annual report

There are two essential forces driving the cellular market in China. First, it is clear that cellular demand is still closely linked to demand for basic services. In other words, cellular services are being used as a substitute to fill the gap between demand and supply of basic telephony service. Second, the introduction of competition into the hitherto monopolistic market has prompted a fall in cellular tariffs over 1994 and 1995, and a predictable jump in cellular subscribership, which has helped to maintain the momentum in a market that is now larger than ever.

APPENDIX 5

CURRENT TELECOM REGULATORY STRUCTURE IN CHINA

Regulatory Structure Organizational Chart



APPENDIX 6

PROVINCIAL NETWORK PROFILE (AS OF JUNE 1995)

City/Province	Standard	Vendor	Capacity	Description
Beijing	TACS	LME	100000	Cut over in 1990
	TACS	MOT	66000	Cut over in 1987
	GSM	MOT/NOK	100000	Initial cut over in 1994
Shanghai	TACS	MOT	90000	Cut over in 1988
	TACS	LME	90000	Cut over in 1989
	GSM	ALC/SIE	50000	
Tianjin	TACS	MOT	40000	Cut over in 1993
	TACS	LME	67360	Cut over in 1990
	GSM	MOT/NORTEL	20000	Cut over in 1995
Anhui	TACS	MOT	26000	Cut over in 1993
Fujian	TACS	MOT	77000	Cut over in 1990
	AMPS/DAMPS	LME	3400	In Fujian city, cut over in 1995
	GSM	NOK		Cut over in late 1995
Guangdong	TACS	LME	928200	Cut over 1987
	AMPS/DAMPS	LME	10000	In Zhuhai, cut over in 1995
	GSM	LME/Italtel/ NT/SIE/MOT	50000	Trial network in 1994
	GSM	LME	403800	Expansion network in 1995
Guangxi	TACS	LME	163000	Cut over in 1992
	AMPS/DAMPS	LME	3100	Cut over in 1994
	GSM	LME	15000	Cut over in 1995
Guizhou	TACS	MOT		Cut over in 1993
Hainan	TACS	LME	34093	Cut over in 1992
	GSM	Italtel	30000	Cut over in 1995
Hebei	TACS	LME	83443	Cut over in 1987
	GSM	NORTEL	40000	
Heilongjiang	TACS	MOT	30000	Initial cut over 1992
	TACS	LME	40000	Cut over in 1994
	GSM	LME	120000	Cut over in 1995
Henan	TACS	MOT	51000	Cut over in 1991
Hubei	TACS	MOT	40000	Cut over in 1992
	GSM	Italtel	150000	Cut over in 1995
Hunan	TACS	LME	128000	Cut over in 1992
	AMPS/DAMPS	LME	6000	Cut over in 1993
Jiangsu	TACS	MOT	270000	Cut over in 1993
	TACS	LME	108000	Cut over in 1993
	AMPS/DAMPS	LME	3600	Cut over in 1995
	GSM	LME	125370	Cut over in 1995
Jiangxi	TACS	MOT	40000	Cut over in 1993
Jilin	TACS	MOT		Cut over in 1993
Liaoning	TACS	LME	76550	Cut over 1994
	TACS	MOT	125000	
	AMPS/DAMPS	LME	4670	Cut over in 1995
	GSM	LME	125000	Cut over in late 1995
Ningxia	AMPS	AT&T	2600	Cut over in 1993
Qinghai	TACS	LME	7000	Cut over in 1993
Shaaxi	TACS	MOT		Cut over in 1993
	AMPS	AT&T	18600	Xian city
Shandong	TACS	MOT		Cut over in 1990
	GSM	LME	70000	Cut over in 1995
Shanxi	TACS	MOT	20000	Cut over in 1995
	AMPS	AT&T	2600	
Sichuan	TACS	MOT		15000 subscriber in 1995
	TACS	LME	97447	Cut over in 1990
Xinjiang	TACS	MOT	6500	Cut over in 1993
	AMPS	AT&T	6500	Cut over in 1992
Yunnan	TACS	MOT		13000 subscriber in 1995
	AMPS	AT&T		Cut over in 1993
Zhejiang	TACS	MOT	270000	Cut over in 1992
	TACS	LME	138000	Cut over in 1994
	GSM	ALC/MOT	18100	First GSM in China

APPENDIX 7

DETAILED LIST OF POPULAR WIRELESS HANDSET IN CHINA MARKET

Manufacturer	Model	Standard	MPT ref.	Approval ref.
Ericsson	AH237	AMPS		
Ericsson	EH238	TACS	96-1-006	ERI-006-96-0006
Ericsson	EH288	TACS	96-1-003	ERI-003-96-0003
OKI	OP1150A/E	AMPS		M9406
Hitachi	CR6000HK	TACS		
Samsung	SH-810	TACS	96-1-107	SAN-002-96-0107
KOKUSAI	PX30175	TACS		
Novatel	TM2	TACS		
Philips	PR653	TACS		
NEC	P688A	TACS	96-1-087	NEC-002-96-0087
Sanyo	CMP330	TACS		
Uniden	CP5500	TACS		
Motorola	168VA	TACS	96-1-044	MOT-011096-0044
Motorola	168C	TACS	96-1-045	MOT-011096-0045
Motorola	9900X	TACS		
Fujitsu	FR900	TACS		
Nokia	N232	TACS	96-1-058	NOK-002-96-0058
Ericsson	GA318	GSM	96-1-064	ERI-008-96-0064
Ericsson	GH388	GSM	96-1-001	ERI-001-96-0001
Ericsson	GF388	GSM	96-1-002	ERI-002-96-0002
Ericsson	GH337	GSM	96-1-004	ERI-004-96-0004
Ericsson	GF337	GSM	96-1-005	ERI-005-96-0005
Mitsubishi	MT-20	GSM	96-1-007	MIS-001-96-0007
Panasonic	EB-G400	GSM	96-1-008	PAN-001-96-0008
Panasonic	EB-G500	GSM	97-1-001	PAN-003-97-0001
Nortel	N911	GSM	96-1-014	NRT-002-96-0014
Siemens	S3	GSM	96-1-015	SIE-001-96-0015
Siemens	S4	GSM	96-1-016	SIE-002-96-0016
Alcatel	HB200	GSM	NA	NA
Alcatel	HC600	GSM	96-1-017	ALC-001-96-0017
Alcatel	HC800	GSM	96-1-086	ALC-005-96-0086
Motorola	7500	GSM		
Motorola	8200E	GSM	96-1-023	MOT-002-96-0023
Motorola	8200C	GSM	96-1-024	MOT-003-96-0024
Motorola	8700C	GSM	97-1-003	MOT-038-97-0003
Motorola	StarTAC328	GSM	97-1-023	MOT-052-97-0023
Nokia	2110	GSM	96-1-033	NOK-001-96-0033
Nokia	8110	GSM	96-1-118	NOK-006-96-0118
Philips	TCD312/2P	GSM	96-1-043	PHI-001-96-0043
NEC	G28	GSM	96-1-072	NEC-001-96-0072

Source: "Types of Mobile Phones Approved by MPT for Network Access," China Wireless Communications, February 1997, p. 55.

APPENDIX 8

COMPETITIVE GSM HANDSET IN CHINA MARKET

Model	Ericsson GA318	Ericsson GH337	Ericsson GH388	Nokia 2110	Nokia 8110
Manufacturer	Ericsson	Ericsson	Ericsson	Nokia	Nokia
GSM Class	IV	IV	IV	IV	IV
Retail price					
Display	3 X 12	3 X 12		4 X 12	
SIM card size	Small	Small	Mini	Mini	
Size in cm	13 X 4.9 X 2	13 X 4.9 X 2		14.8 X 5.6 X 2	
Volume in cm^3		160		179	
Weight					
Standard battery		193	170	235	
High capacity battery		255/275		326	
Standby time/Talk time					
Standard battery		20h/1h40		20h/1h10	
High capacity battery		35h/3h10	80h/4h	50h/3h	
Recharge time		1h/3h		1h	
Number of memory dials		SIM dependent	99	125	
Data link		Yes	Yes	Yes	

Model	Motorola 7500	Motorola 8200	Motorola 8700	Motorola StarTAC	Siemens S3
Manufacturer	Motorola	Motorola	Motorola	Motorola	Siemens
GSM Class	IV	IV	IV	IV	IV
Retail price					
Display	2 X 12 (24 digits)	2 X 12 (24 digits)	2 X 12 (24 digits)		4 X12
SIM card size	Full	Full	Full		Full
Size in cm	14 X 5.8 X3.2	13 X 5.9 X 2.3			14.6 X 6 X 2.6
Volume in cm^3	295	165			
Weight					
Standard battery	275	180			270
High capacity battery	325	287			350
Standby time/Talk time					
Standard battery	15h/1h30	11h/1h		35h/1h45	18h/1h40
High capacity battery	30h/3h	20h/3h		60h/3h5	36/3h20
Recharge time	1.5h	1h			1h
Number of memory dials	100 plus 155 on SIM	100 plus SIM			
Data link	Yes	Yes	Yes	Yes	Yes

Model	Siemens S4	Alcatel HC600	Alcatel HC800	Mitsubishi MT-20	Panasonic EG400
Manufacturer	Siemens	Alcatel	Alcatel	Mitsubishi	Matsushita
GSM Class	IV	IV	IV	IV	IV
Retail price					
Display		60 digits	75 digits	48 digits	24 digits
SIM card size		Full	Full	Mini	Mini
Size in cm	15 X 4.5 X 2.8				
Volume in cm^3					
Weight					
Standard battery	235	220	220	200	198
High capacity battery		350	249	250	
Standby time/Talk time					
Standard battery	20h/1h40	22h/1h15	31h/1h25	20h/1h20	14h/1h20
High capacity battery		42h/2h20	42h/2h20	40h/2h30	33h/3h
Recharge time	1h	1h	1h	50 min.	1h/20
Number of memory dials		99 plus SIM	99 plus SIM	99	SIM dependent
Data link		No	No	Yes	Optional

APPENDIX 9

COMPETITIVE ANALYSIS CHART

Nortel N911 vs ALCATEL HC 800

PRODUCT	N911 STRENGTHS	N911 WEAKNESSES
PHYSICAL	• Length: 13cm vs 14.3 cm	• No graphic display
AUTONOMY	• Longer standby and talk time	• Limited number of batteries
SERVICES	• HOT KEY (user programable key)	• Following features missing: • CUG • AoCc • Agenda • Calculator • Alarm
ACCESSORIES	• Booster 5W • Flip in accessory	

Nortel N911 vs NOKIA 2110

PRODUCT	N911 STRENGTHS	N911 WEAKNESSES
PHYSICAL	• Smaller than Nokia 2110 i w (13cm length vs14.8cm)	
AUTONOMY	• Longer talk time and standby time with the 850 mAh battery	• Limited number of batteries
SERVICES	• HOT KEY (user prommable key) • Date/clock	• Following features missing: • Alarm • Conference, 2 PIN • Phase 2 features • CoLP,CUG,FDN
ACCESSORIES	• Booster 5W • Car installation kit allows handsfree or private mode with no extra cost • ISO SIM card for TP 9050 • Flip as standard accessory	

Nortel N911 vs SIEMENS S4

PRODUCT	N 911 STRENGTHS	N911 WEAKNESSES
PHYSICAL	• Smaller length	• Heavy (S4 : 165g)
AUTONOMY		• Lower (SIEMENS S4: 4h/30h)
SERVICES	• HOT KEY (user programmable key) • Date/clock • Data	• Missing features : • SMS CB • MPTY (conference) • Call screening
ACCESSORIES	• Booster 5W • Car installation kit allows handsfree or private mode with no extra cost • AC Travel Charger • ISO SIM card • Flip as accessory	

Nortel N911 vs Mitsubishi MT 20

PRODUCT	N911 STRENGTHS	N911 WEAKNESSES
PHYSICAL	• Thickness: 2.3cm vs 3.3cm	• Weight:: 255g vs 200g
AUTONOMY	• Longer talk time and standby time	• Display: 4 info lines +2 status symbol lines (MT20)
SERVICES	• Hot key • CLIR	• Following features missing: • SMS CB • Alarm/agenda • Calculator • MEMO
ACCESSORIES	• Booster 5W • Car installation kit allows handsfree or private mode with no extra cost • AC Travel Charger • ISO SIM card	

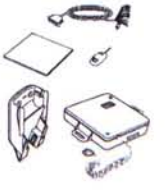
APPENDIX 10

OPTIONAL KITS DESCRIPTIONS

Car Installation Accessories

Cigarette lighter adapter cable

Mini car kit



Car installation kit

Booster kit
(not available in DCS 1800)

Booster
(for car installation kit)
(not available in DCS 1800)

Hands-free loudspeaker

Data cable

Office & Travel Accessories

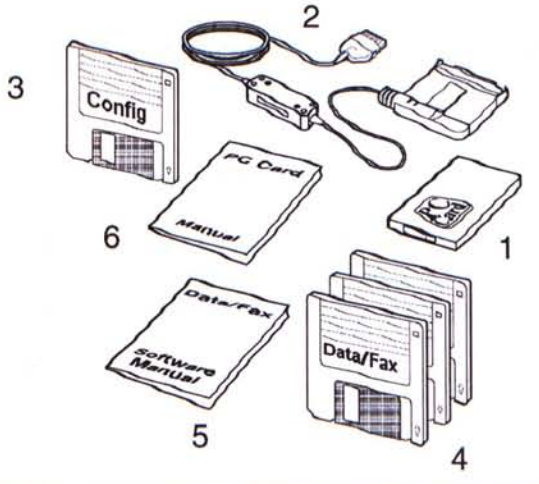
Desktop charger

AC travel charger

Batteries
High capacity : 550 mAh NiMH
Very high capacity : 850 mAh NiMH

Data/fax kit

Data/fax kit



1 PC card

2 Cable

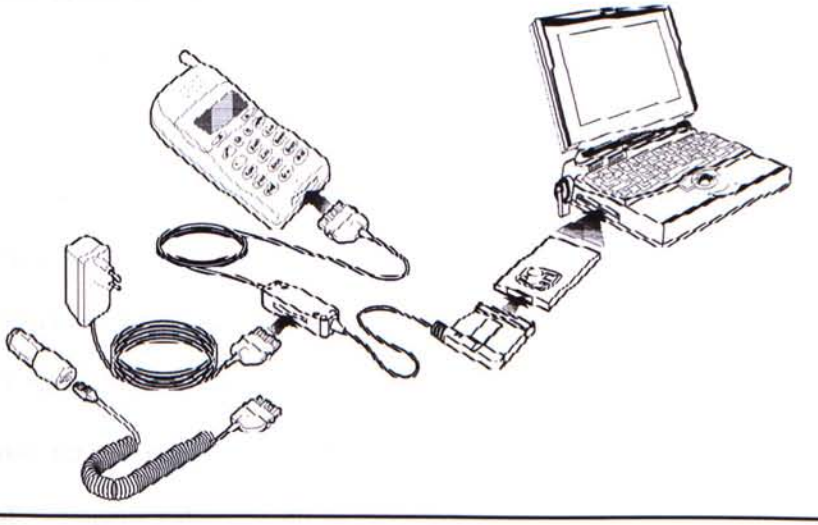
3 Configuration SW

4 Data/Fax SW

5 Data/Fax user manual

6 PC card user manual

Mobile office card - on the move



APPENDIX 11

FACTS ABOUT DISTRIBUTION IN CHINA

The distribution environment is complex and some of the relevant points are summarized as follows:

- For branded packaged goods manufacturers arriving from Europe and North America, China represented a return to the golden era of pull marketing. Retailers were mostly small and weak, and distributors passive. Big packaged good manufactures "pulled" consumers to purchase their brands through heavy television advertising, point-of-purchase materials, and packaging.

- Many importers maintained sales forces that worked directly with some of the wholesalers distributing their products. Others have gone further and managed to get importers and Chinese foreign trading organizations to act more as agents, effectively allowing the foreign seller to direct and control importation and distribution in China.

- The trend toward localization of production has forced foreign vendors to seek out Chinese partners. In doing so, one of the most sought-after attributes of a local partner is an established distribution network. In most cases, the local partner is somehow connected to the MPT, the MEI, Unicom, Jitong, CESEC, and local and provincial governments. The mobile handset market, for both paging and cellular, is much more open and major vendors often deal with local distributors and do not rely on direct sales.

- Officially, a 100% import tax is imposed on electronic goods, but the local distributors are usually able to get around most of this burden.

APPENDIX 12

FACTS ABOUT ADVERTISING IN CHINA

The advertising environment is complex and dynamic in China. Some facts are summarized as follows:

- The three main cities-Guangzhou, Shanghai and Beijing-receive the lion's share of major advertising.

- The key to a successful launch is to persuade wholesalers that the product has a strong brand image backed by heavy advertising. Typically, trade-oriented luncheons are arranged with presentations to wholesalers, sales teams, and key retailers, covering product benefits and concepts, pricing, sizing, local media weights, and an explanation about how the product fits in with other products offered by the company. If the launch includes a television commercial, it is aired at the meeting, and brochures with stills from the commercial are distributed. Materials developed for various levels of the trade - wholesalers, retailers, and sales teams - communicate the brand's positioning.

- Television's popularity and reasonable cost has made it the advertising medium of choice for foreign companies. Nationwide, viewers of 15-plus years spend an average of just over 19 hours a week watching television, according to SRG-Nielson. The cost of reaching all these people remains low: an average of US$1.9 to reach 1,000 people in a 30-second commercial in China, compared with US$6 in Hong Kong and US$10 in the USA. Rates vary greatly from station to station: a 30-second joint-venture spot costs RMB20,400 on Guangdong TV, RMB3,600 on Wuhan TV, and RMB77,000 on CCTV.

- The advantage of newspapers, magazines, and radio stations is that many enjoy niche markets and niche viewership, which allows more targeted media buys. The drawback of these media is

that there is even less research available on them. Under greater government control than television, China's more than 4,000 newspapers are not very popular among foreign advertisers because of their unstimulating content and unattractive print quality.

- Most magazines are low-circulation nationwide specialist titles; very few cater to the "general interest" market.

- Top publications based on readership:

	Guangzhou	Shanghai	Beijing
Top 3 dailies	Yangcheng Wanbao	Xinmin Wanbao	Beijing Wanbao
	Guangzhou Ribao	Jiefang Ribao	Beijing Ribao
	Nanfang Ribao	Wen Hui Bao	Beijing Qingnian Bao
Top 3 weeklies	Guangdong Dianshi Zhoubao	Meizhou Guangbo Dianshi	Beijing Guangbo Dianshi
		Shanghai Jiating Bao	China TV Guide
	Nanfang Saturday	Shenghuo Zhoukan	Zuojia Wenzhai
	Guangzhou Fazhi Bao		
Top 3 monthlies	The Family Doctor	The Young Generation	Readers
	Family Magazine	Readers	Popular Cinema
	Readers	Popular Medicine	Overseas Digest
Base: All aged 12 +	3,499,000	7,290,000	5,556,000

Source: SRG China Media Index, 1995

APPENDIX 13

TV COMMERCIAL #2 (PRODUCT)

Nortel made its TV advertising debut in the U.K. recently with ads for the handset it is supplying to mobile phone service provider One 2 One. The faithful hound (pictured) is one of the ad's subjects – a favourite pair of comfortable shoes is another example – promoting the "phone you feel at home with."

APPENDIX 14

SAMPLES OF BROCHURES AND LEAFLETS

Reflecting the future of personal mobile communications

N911

DIGITAL
Mobile Phone

NORTEL

N911
DIGITAL
Mobile Phone

QUICK REFERENCE GUIDE

To switch on: Press ● until message appears on display.
Enter PIN, if activated, and confirm with ≡O or ▲
To make a call: [Telephone no.] ✆
To receive a call: Telephone rings and red LED flashes: ✆
To terminate or reject a call: ☎
To redial: ✆ ✆ or ✆ ▲
To lock keypad: ▲ 9WXY 1
To unlock keypad: Any key (except ●), then ▲
To switch off: Press ● until "Power off" is displayed.
Speed dialling:
[1 digit location number] ✆ or
[1 or 2 digit location number] ≡O ✆
Notepad:
To note telephone no.: [Telephone no.] ▲
To recall no.: ▮
Menu
To enter menu mode: ▲
To scroll: ▲ or ▮
To confirm: ▲
To change parameter: ▲ or ▮
To abort menu: ☎

COMPETITOR COMPARISON CHART

	Nortel N911	*Ericsson GH337*	*Motorola 8200*	*Nokia 2110E*
Battery Technology				
Standard Battery	NiMH (550mAh)	NiMH (550mAh)	NiMH (750mAh)	NiMH (550mAh)
High Capacity Battery	NiMH (900mAh)	NiMH (950mAh)	NiCd (1100mAh)	NiCd (1100mAh)
Dimensions (mm)				
Standard Battery				
Length	130	130	156	148
Width	57	49	60	56
Thickness	23	24	28	23
High Capacity Battery				
Length	130	130	156	148
Width	57	49	60	56
Thickness	23	34	31	35
Weight(g)				
Standard Battery	230	220	243	235
High Capacity Battery	258	250	265	319
Talk Time (minutes)*				
Standard Battery	100	110	130	160
High Capacity Battery	160	190	190	320
Stand-by Time (hrs)*				
Standard Battery	26	20	24	30
High Capacity Battery	42	35	36	60
RF Power (Output power)	2W	2W	2W	2W
Display (Lines of text)	4	3	2	4
SIM Card	Full Size (ISO)	Plug-in	Plug-in	Full Size (ISO)
Short Message Service	yes	yes	yes	yes
Call Hold/ Call Wait	yes	yes	yes	yes

** Talk time and stand-by time may vary depending on network and phone usage.*
Please Note: *This table has been based on publicly available information including manufacturer brochures. Nortel takes no responsibility for the accuracy of the information on which this table is based. Current as at 28th June 1999.*

For more information please call **1800 802 445**

NORTEL
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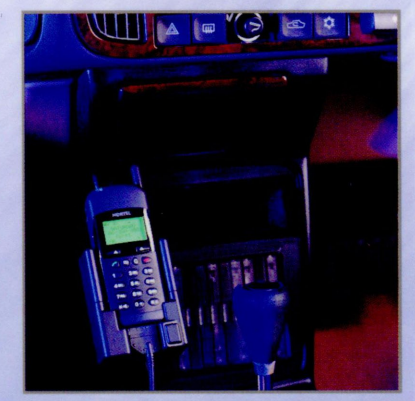
Enterprise Networks • Wireless Networks • Broadband Networks
Switching Networks • Network Applications

NORTEL

N911

DIGITAL
Mobile Phone

GSM
GLOBAL SYSTEM FOR MOBILE COMMUNICATIONS



Business on the move

Business in the 90s means business on the move. And for today's executive, the Nortel N911 digital mobile phone is the essential communications tool. Cupped in your hand or clipped on your belt; stowed in your briefcase or installed in your car, it goes where you go - its powerful options and productivity features ready to be activated, at your fingertips.

We know that getting business done is your priority, not fiddling with buttons or fussing with codes. That's why with the N911 we've gone visual. Straightforward prompts on the easy-to-read display guide you in programming the N911 to deliver precisely the personalised, one-touch functionality you want. The result - superb convenience and portability, plus the quality and performance of digital technology, all from a name you can trust.

From the people who build networks

For more than 100 years, Nortel has been pioneering telecommunications, working behind-the-scenes, delivering innovative telecommunications solutions - like broadband multimedia, enterprise, switching and wireless networks - to telephone companies, mobile telephone operators, government agencies, multi-national corporations, residential users, and business organisations large and small.

Nortel is Canadian based with around 63,000 employees in 100 countries, annual revenues in excess of $US10 billion, and 48 manufacturing facilities worldwide. We are also listed on the New York, London and Toronto stock exchanges.

Since Nortel's establishment in Australia in 1986, we have helped provide leading-edge telecommunication systems to Australia's national carriers. We have initiated sustainable product design, manufacturing and export programs with local partners; increased the productive capacity of the local industry by transferring global technologies and skills; participated actively in industry and Government development programs; laid the foundation for Australia to become a major centre for engineering, system development and customer support for the Asia Pacific region; and continued to work closely with business partners in marketing Australia overseas.

Mobile communications is one of our major strengths. Nortel has implemented digital wireless networks in Australia, China, Colombia, Finland, France, Israel, Mexico, Singapore, Taiwan and the United States.

The N911 is a product of this experience and expertise. It's from the people who build networks, for the people who use them.

Nortel: A proud lineage

Nortel traces its history to the very roots of telecommunications, to the invention of the telephone itself - by Alexander Graham Bell at his parent's home in Canada in 1874. Two years later, Bell assigned 75% of the Canadian patent to his father, Melville - a step that led to the formation, in 1880, of the Bell Telephone Company of Canada and in 1895, a manufacturing branch called Northern Electric and Manufacturing Company. This is the ancestry of today's Nortel.

NORTEL

Class, comfort and convenience

At 13cm long and weighing in at only 230g, the N911 is good-looking, lightweight and fits your palm like a friendly handshake. Its soft-touch keypad is clear and uncluttered, ideal for one-hand, on-the-go operation.

The N911 keeps communication channels open: up to 100 minutes talktime and 26 hours standby with the standard battery; up to 160 minutes talktime and 42 hours standby with the optional High Capacity battery. Unlike some other mobile phones, the high capacity battery for the N911 does not add to the size of the handset. Battery charging time is 1.5 hours with standard battery.

The N911 accommodates an international format SIM (Subscriber Identity Module) card - giving you a personal telephone directory of up to 99 names and numbers, with the last ten numbers called stored automatically for ready redial. The GSM standard also allows you to use your N911 overseas in regions such as Europe, Asia and the Middle East.

Easy to program, effortless to use

The easy-to-read display makes the N911 very simple to use. Four 12-character lines display menu prompts, messages, numbers dialled, the SIM-stored directory and time and date, while one of the icons continually displays signal strength.

The large, high contrast screen also makes the N911 very simple to program. A scrolling menu quickly and easily guides you in activating the N911's many advanced GSM network services - like call forwarding, call barring, call hold, call waiting, voice mail and Short Message Service.

Other functions are just as effortless. Incoming calls can be answered by pressing any button when using the car kit; during a call, numbers can be "noted" on a scratchpad for subsequent dialling or storage.

Then there's the special Hot Key - a programmable key for assigning a frequently used function, such as storing a phone number you dial regularly, or temporarily forwarding your calls to another number.

Business on the road

With the optional handsfree car installation kit, the N911 is quickly transformed into a car phone, allowing you talk on the phone with your hands on the wheel and eyes on the road. It comes with microphone, connections for external antenna and car radio muting, and an optional booster to increase output to 5 Watts. There is also a Quick car kit for charging the N911 in your car's cigarette lighter.

ACCESSORIES

Handsfree Car Kit

Desktop Kit

Quick Car Kit

Batteries - Standard & High Capacity

Optional Booster for Car Kit

Phone shown actual size

Accessories

- ***Quick Car Kit:*** cigarette lighter adaptor and Quick Clip holder
- ***Car Installation Kit:*** handsfree operation with a Quick-Clip holder to secure the handset; microphone; car interface box; and cabling system for connection to external antenna, radio muting, car ignition sensor and loudspeaker.
- ***Booster:*** optional addition to Car Installation Kit, boosts output power to 5 Watts during car-mounted operation.
- ***Desktop Kit:*** dual slot battery charger for handheld and spare battery.
- Standard and High Capacity Ni-MH batteries

Nortel
N911
DIGITAL
Mobile Phone

Key Features

Security
- Password protection (PIN)
- Anti-theft code
- Programmable automatic power off (in-car mounted configuration)

Network Functions
- Automatic and manual network selection
- Preferred network list programmed in SIM card
- Permanent display of received signal strength
- Call forwarding
- Short Message Service
- Call barring
- Call hold
- Call waiting

Ease of Use
- High contrast display: four 12 character lines plus one line of icons
- Personally programmable Hot Key
- Interactive menu-driven user interface
- Ten number redial memory stack
- Abbreviated dialling
- Permanent battery charge indicator
- Time and date display
- Directory of up to 99 names and numbers on SIM card
- Scratchpad memory during call
- Any key answer in car kit
- Four language selection for menu prompts
- Tone generator (DTMF)

Nortel N911 Basic Kit

- Handportable phone with pull-up antenna
- Ni-MH Standard battery
- AC charger
- Belt clip
- User's guide

Technical Specifications

- ***GSM Class:*** 4 (3 with in-car booster)
- ***Output power:*** 2W as handheld, 5W with in car booster
- ***Display:*** 4 lines of 12 alphanumeric characters plus 1 line of icons
- ***Dimensions:*** 13cm x 5.7cm x 2.6cm (with either Standard or High Capacity battery)
- ***Weight:*** 230g (with Standard battery)
- ***Standby time:*** Up to 26 hours with Standard Ni-MH battery; up to 42 hours with High Capacity Ni-MH battery
- ***Talktime:*** up to 1 hour 40 minutes with Standard battery; up to 2 hours 40 minutes with High Capacity battery
- ***Charge time:*** 1 hour 30 minutes (with Standard battery)

NDSET PRICES AND SERVICE CHARGES

N911 DIGITAL Mobile Phone

Technical Specifications

- GSM Class: 4 (3 with in-car booster)
- Output power: 2W as handheld, 5W with in car booster
- Display: 4 lines of 12 alphanumeric characters plus 1 line of icons
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- Weight: 230g (with Standard battery)
- Standby time: Up to 26 hours with Standard Ni-MH battery; up to 42 hours with High Capacity Ni-MH battery
- Talktime: up to 1 hour 40 minutes with Standard battery; up to 2 hours 40 minutes with High Capacity battery
- Charge time: 1 hour 30 minutes (with Standard battery)

Nortel N911 Basic Kit

- Handportable phone with pull-up antenna
- Ni-MH Standard battery
- AC charger
- Belt clip
- User's guide

NORTEL

A World of Networks

Enterprise Networks • Wireless Networks • Broadband Networks
Switching Networks • Network Applications

From the people who build networks

Nortel has been pioneering telecommunications for more than 100 years, working behind the scenes delivering innovative telecommunications solutions - like broadband multimedia, enterprise, switching and wireless networks - to telephone companies, mobile telephone operators, government agencies, multi-national corporations, residential users, and business organisations large and small.

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N911

DIGITAL
Mobile Phone

NORTEL

N911 DIGITAL Mobile Phone

Technical Specifications

- GSM Class: 4 (3 with in-car booster)
- Output power: 2W as handheld, 5W with in car booster
- Display: 4 lines of 12 alphanumeric characters plus 1 line of icons
- Dimensions: 13cm x 5.7cm x 2.6cm (with either Standard or High Capacity battery)
- Weight: 230g (with Standard battery)
- Standby time: Up to 26 hours with Standard Ni-MH battery; up to 42 hours with High Capacity Ni-MH battery
- Talktime: up to 1 hour 40 minutes with Standard battery; up to 2 hours 40 minutes with High Capacity battery
- Charge time: 1 hour 30 minutes (with Standard battery)

Nortel N911 Basic Kit

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- AC charger
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NORTEL

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Then there's the special Hot Key - a programmable key for assigning a frequently used function, such as storing a phone number you dial regularly or temporarily forwarding your calls to another number.

NORTEL

Key Features

Security
- Password protection (PIN)
- Anti-theft code

Network Functions
- Automatic and manual network selection
- Preferred network list programmed in SIM card
- Permanent display of received signal strength
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- Short Message Service
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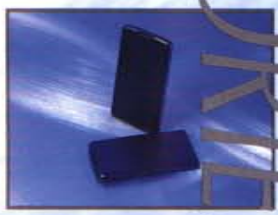
- Ten number redial memory stack
- Abbreviated dialling
- Permanent battery charge indicator
- Time and date display
- Directory of up to 99 names and numbers on SIM card
- Scratchpad memory during call
- Any key answer in car kit
- Four language selection for menu prompts
- Tone generator (DTMF)

ACCESSORIES

Handsfree Car Kit

Desktop Kit



Batteries - Standard & High Capacity

Accessories

- ***Quick Car Kit:*** cigarette lighter adaptor and Quick Clip holder
- ***Car Installation Kit:*** hands-free operation with a Quick-Clip holder to secure the handset; microphone; car interface box; and cabling system for connection to external antenna, radio muting, car ignition sensor and loudspeaker.
- ***Booster:*** optional addition to Car Installation Kit, boosts output power to 5 Watts during car-mounted operation.
- ***Desktop Kit:*** dual slot battery charger for handheld and spare battery.
- Standard and High Capacity Ni-MH batteries

Phone shown actual size

APPENDIX 15

MOBILE HANDSET PRICES AND SERVICE CHARGES IN CHINA

Beijing - China Telecom Network (MPT)

Type	Handset price	Network access fee	Fees for use of frequency	Down payment for call charge	Total
Motorola 7200	6000	3000	112.5	1000	10112.5
Motorola 7500	6000	3000	112.5	1000	10112.5
Motorola 8200	7300	3000	112.5	1000	11412.5
Ericsson GH337	8500	3000	112.5	1000	12612.5
Siemens S3	8000	3000	112.5	1000	12112.5
Siemens S4	8300	3000	112.5	1000	12412.5
Nokia 2110	7800	3000	112.5	1000	11912.5

Source: BTA (As of June 1996, all in RMB)

China Unicom Network

Type	Handset price	Network access fees	Fees for use of frequency	Down payment for call charges	Total
Motorola 7200			112.5	1000	
Motorola 7500			112.5	1000	
Motorola 8200	7000	3000	112.5	1000	11112.5
Ericsson GH337	8200	3000	112.5	1000	12312.5
Siemens S3	6000	3000	112.5	1000	10112.5
Siemens S4	8300	3000	112.5	1000	12412.5
Nokia 2110	7500	3000	112.5	1000	11612.5

Source: Unicom (As of June 1996, all in RMB)

Guangzhou - China Telecom Network (MPT)

Type	Handset price + SIM card fee	Network access fees	Fees for use of frequency	Down payment for call charges
Motorola 8700C	6900	3000	112.5	1000
Motorola 8200C	5200	3000	112.5	1000
Ericsson GH388	5800	3000	112.5	1000
NEC G28	4400	3000	112.5	1000
Nokia 8110	7200	3000	112.5	1000

Source: Guangdong PTA (As of December 1996, all in RMB)

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